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Saskatchewan's forest industry, 1985

T.W. Steele, D.M. Boylen, and A. Baumgartner

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SASKATCHEWAN'S FOREST INDUSTRY, 1985

T.W. Steele[1], *D.M. Boylen*[2], *and A. Baumgartner*[3]

INFORMATION REPORT NOR-X-295

NORTHERN FORESTRY CENTRE
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ABSTRACT

The forest industry in Saskatchewan was surveyed in 1985. The results are analyzed in terms of capital, employment impact, capacity and production, markets, annual revenues and expenditures, and socioeconomic impact. Numerous tables and figures provide detailed information.

RESUME

Les résultats d'une étude sur l'industrie forestière de la Saskatchewan réalisée en 1985 sont analysés dans ce rapport sur le plan des capitaux, des emplois, des possibilités et de la production, des marchés, des recettes et de dépenses annuelles et des effets socioéconomiques. On y trouve un grand nombre de tablaux et de données qui fournissent des renseignements détailles.

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NOTE

The exclusion of certain manufactured products does not necessarily imply disapproval nor does the mention of other products necessarily imply endorsement by the Canadian Forestry Service.

CHAPTER 1

INTRODUCTION

Saskatchewan's forest industry brings diversity to a provincial economy that has overspecialized in agriculture and mining. Opportunities currently exist for the expansion and development of the forest industry; a surplus of unallocated wood fiber, emerging products and processes, and developing global markets for wood products enable Saskatchewan to reduce its dependence on a specialized economy. The timing for development is limited, however, as rapidly increasing competition, both domestic and international, could jeopardize the future health of the industry.

Forestry is the sole economic base for several northern Saskatchewan communities. Changes in the level of forestry activity have a direct impact upon the structure of the forest resource and the stability of local economies. Decision makers require detailed information on the structure and direction of the forest industry to accurately assess policy alternatives. This information is essential for strategic planning in forest resource management and forest industry development.

Under the Canada-Saskatchewan Forest Resource Development Agreement, a study was initiated to determine the current size, structure, and economic impact of the primary wood-using industry. This report describes the status of Saskatchewan's forest industry in 1985 and identifies opportunities for development.

Classification of the Forest Industry

Statistics Canada (1980) has developed a method of industrial classification that reflects the structure of the Canadian forest industry. The Canadian forest industry has been organized under three broad groupings: logging, wood industries, and paper and allied industries. Specific industries within each of these groups are presented in Appendix 1.

The information for this report, however, was collected from both primary and secondary sources. As mentioned, most of the primary data were obtained from a survey of the provincial forest industry conducted by Forintek Canada Corp. in 1985. Secondary data were obtained from the Forestry Branch of Saskatchewan Parks, Recreation and Culture and various Statistics Canada publications. More-detailed information on data collection can be found in Appendix 2, and there is a summary of previous studies in Appendix 3.

Thus, two separate definitions of the forest industry have had to be incorporated in this report. When the term *forest industry* is utilized, it refers to the broader Statistics Canada definition. When the term *primary wood-using industries* is utilized, it refers to data generated from the 1985 survey, which included logging operations, sawmills, independent planing mills, wood-treating plants, miscellaneous wood-using industries (e.g., building timber plants and lath mills), and pulp, waferboard, and plywood mills. Table 1 indicates some of the potential differences.

Saskatchewan's Forest Industry: a Systems Approach

Saskatchewan's forest industry can be described as a system of components and interactions that stimulate the physical flow of wood fiber from the standing tree to the finished product (Fig. 1). Canham (1985) identified the following four independent activity stages that comprise the regional forestry system:

1. forest land ownership and management;
2. timber harvesting;
3. primary processing; and
4. secondary manufacturing.

Due to the complexity of the system, no single criterion accurately measures the total contribution of the forest industry to the provincial economy (Ondro and Williamson 1985). The socioeconomic impacts of the forest sector occur as a result of payments made for the inputs and outputs that occur at each activity stage. Primary processing inputs are labor, capital, and raw materials. Outputs include the physical goods produced. Both inputs and outputs may be locally acquired and consumed or imported and exported. The purchase of goods and services from the local economy also generates indirect economic activity (a multiplier effect) in the economy (Canham 1985).

Table 1. Saskatchewan's forest industry by Standard Industrial Classification code. (Source: Statistics Canada 1980.)

Industry group	Standard Industrial Classification code	
	2 digit	3 digit
Logging	04	
Logging industry		041
Wood industries	25	
Sawmills, planing mills, and shingle mills		251
Veneer and plywood mills		252
Other millwork		254
Wood preservation		259
Waferboard		259
Paper and allied industries	27	
Pulp and paper		271
Other converted paper producers		279

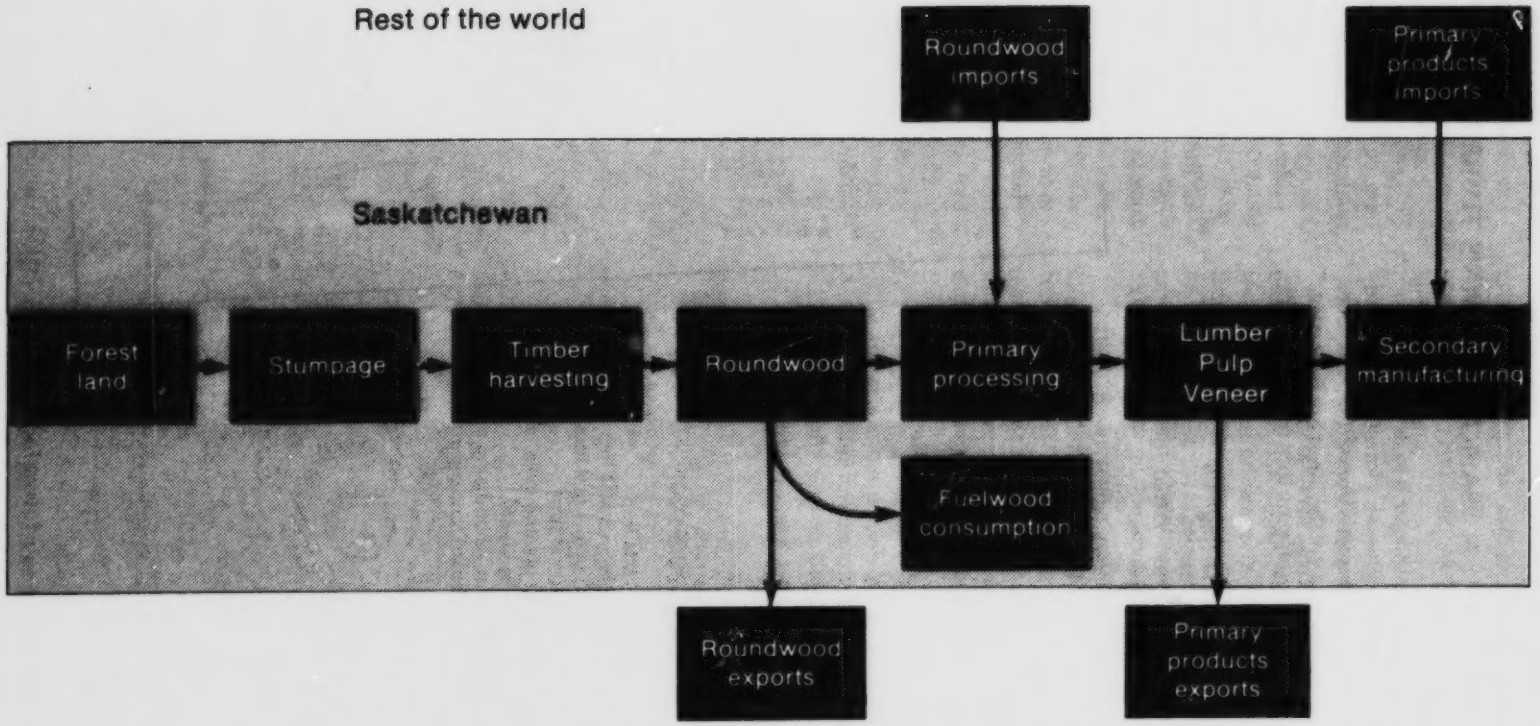

Figure 1. Saskatchewan's forest system—physical flows. (Source: Canham 1985.)

CHAPTER II

SASKATCHEWAN'S TIMBER SUPPLY

The purpose of this chapter is to detail the extent and condition of Saskatchewan's forest resource and the industrial demands placed upon that resource. Although nontimber uses of the forest are important, they are beyond the scope of this report and are therefore not considered.

Forest Regions

The total area of Saskatchewan is 65.2 million hectares, of which land accounts for approximately 87% and water 13%. Forests cover 29.9 million hectares or 46% of the total area of Saskatchewan, and nonforested lands account for 41% of the province.

Most of Saskatchewan's provincial forest lands are situated in the northern half of the province, and virtually all have been retained in public ownership (Fig. 2). On provincial crown lands, the forest has been divided into two categories: the Commercial Forest Zone in the south and the Northern Reconnaissance

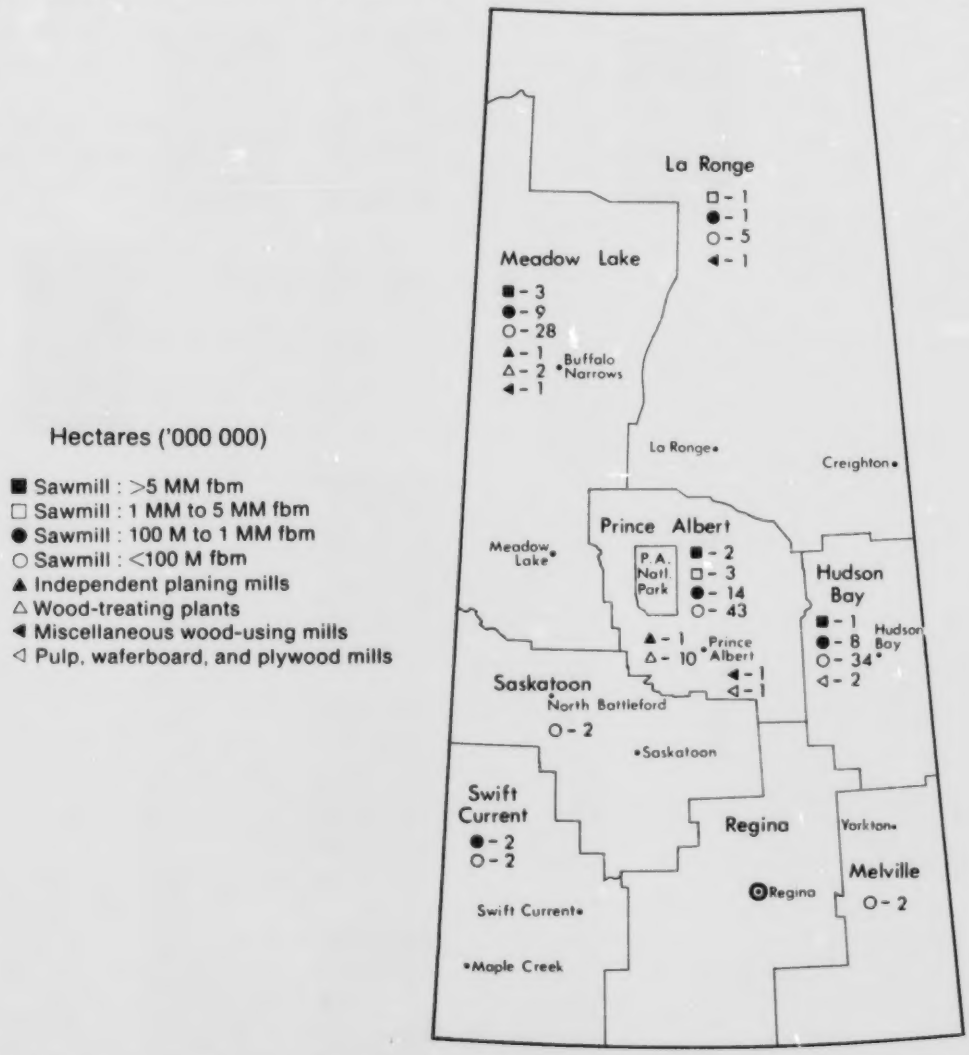

Figure 2. Saskatchewan's forest industry, 1985. MM = million; fbm = foot board measure; M = thousand. (Source: Saskatchewan Parks, Recreation and Culture, Forestry Branch.)

Zone in the far north. For reasons of timber quality and accessibility, the Reconnaissance Zone is not considered commercially available at this time.

In the Commercial Forest Zone (Fig. 3), productive available forest lands account for 6.5 million hectares, nonproductive lands for 5.2 million hectares, and productive not available lands for 1.2 million hectares. Only 10% of Saskatchewan's total area may be considered commercial productive available forest (Fig. 4).

Virtually all of Saskatchewan's forests fall into the Boreal Forest Region as defined by Rowe (1972). The Boreal Forest Region in Saskatchewan is characterized by three predominant coniferous species: white spruce (*Picea glauca* [Moench] Voss), jack pine (*Pinus banksiana* Lamb.), and black spruce (*Picea mariana* [Mill.] B.S.P.). Important deciduous species include trembling aspen (*Populus tremuloides* Michx.) and white birch (*Betula papyrifera* Marsh.). Other tree species that generally occur include balsam fir (*Abies balsamea* [L.] Mill.), tamarack (*Larix laricina* [Du Roi] K. Koch), and balsam poplar (*Populus balsamifera* L.). In eastern Saskatchewan, white elm (*Ulmus americana* L.), green ash (*Fraxinus pennsylvanica* Marsh.), and Manitoba maple (*Acer negundo* L.) occur, while in southern regions, eastern and western cottonwoods (*Populus deltoides* Bartr. and *Populus sargentii* Dode) as well as lodgepole pine (*Pinus contorta* Dougl.) and burr oak (*Quercus macrocarpa* Michx.) are found.

Tenure, Timber Allocation, and Stumpage

The majority of forest lands in Saskatchewan are owned by the province. Harvesting rights are transferred to the private sector through a forest land tenure system that confers harvesting rights in return for certain forest management obligations and for payment of crown timber dues.

Saskatchewan timber resources are allocated to industry through two types of forest tenure. The first type, the Forest Management License Agreement (FMLA), accounts for approximately 66% of the total roundwood harvested in the province. FMLAs are distinguished from other forms of tenure in three ways:

1. the term of the FMLA is 20 years in duration;
2. the scope and degree of forest management responsibility assumed by the FMLA holder are significantly greater than in other forms of tenure; and

Area of Saskatchewan ('000 000 ha)

Total	65.2
Water	8.2
Nonforest	27.1
Commercial Forest Zone	
Nonproductive	5.2
Productive	
Not available	1.2
Available	6.5
Northern Reconnaissance Zone	
Nonproductive	13.0
Productive	4.0

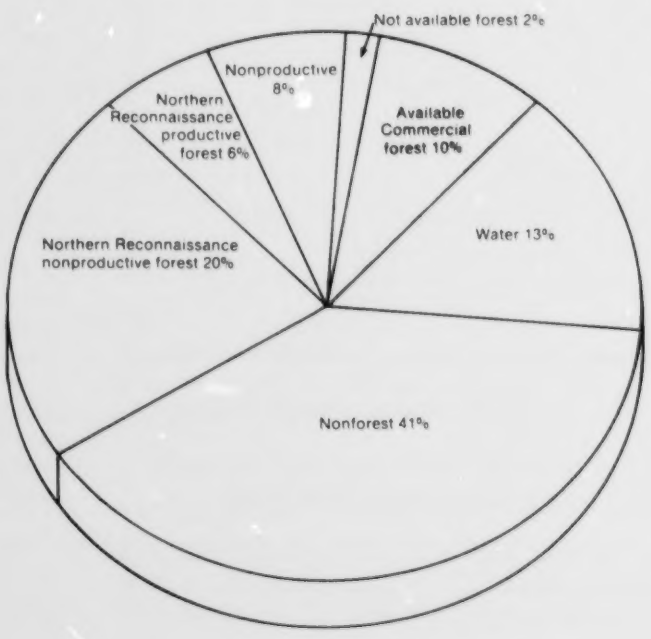

Figure 3. Saskatchewan's forest zones. (Source: Saskatchewan Parks, Recreation and Culture, Forestry Branch.)

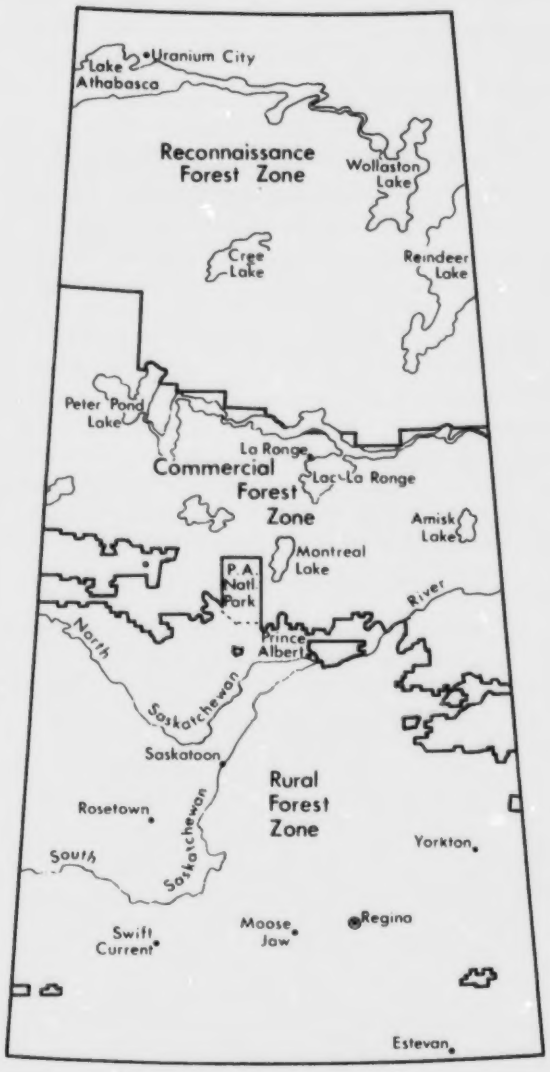

Figure 4. Forest land in Saskatchewan. (Source: Saskatchewan Parks, Recreation and Culture, Forestry Branch.)

3. The FMLA levies a crown timber dues schedule that is distinct from regulatory rates.

In 1985, there were four softwood (coniferous) FMLAs and one hardwood (deciduous) FMLA in place in Saskatchewan. Companies engaged in softwood FMLAs included Weyerhauser Canada Ltd. (a bleached kraft pulp mill), Simpson Timber (Saskatchewan) Ltd. (a sawmill), Meadow Lake Sawmill Co. (a sawmill), and L & M Wood Products Ltd. (an integrated sawmill—wood-treating plant). The sole hardwood FMLA was maintained by MacMillan Bloedel Industries Ltd., which operated a waferboard mill. The location of the FMLAs, referred to as the Core Supply Area, is illustrated in Figure 5.

The remainder of Saskatchewan's roundwood harvest is allocated by way of timber permits. Timber permits are issued for 1-year periods and are generally renewable subject to satisfactory performance by the contractor. At present, the timber permit does not impose forest management responsibilities on the permit holder. Crown timber dues are assessed in accordance with regulation rates.

Over the past 3 years, the Department of Parks and Renewable Resources[1] has placed a very high priority on the renegotiation of FMLAs with all major Saskatchewan forest companies. There were two primary objectives in initiating these negotiations: first, to stabilize wood usage within the limits of productive capacity of Saskatchewan's commercial forests in the interest of securing important economic and social benefits associated with forestry activity; and second, to establish and maintain basic levels of forest use planning, management, and renewal in the interest of confirming the application of the fundamental elements of resource stewardship. These objectives are being implemented as part of a process to transfer increased forest management responsibilities to industry, the end result being a more equitable distribution of the costs and benefits associated with forest resource use.

The negotiation of this new generation of FMLAs was recently completed, and all FMLAs are expected to be formally ratified during 1988. The most significant implications of these FMLAs will be in the areas of forest management responsibilities and crown timber dues. The FMLAs ensure that all logging will be followed by appropriate forest renewal and management financed by the FMLA holder and by other wood users in the FMLA area.

Negotiated stumpage rates for new FMLAs have increased over former arrangements. The rate for softwood timber for several FMLAs has been

[1] On April 1, 1987 the Government of Saskatchewan reorganized the Department of Parks and Renewable Resources. At the time of writing, responsibility for forest management lies within the Department of Parks, Recreation and Culture.

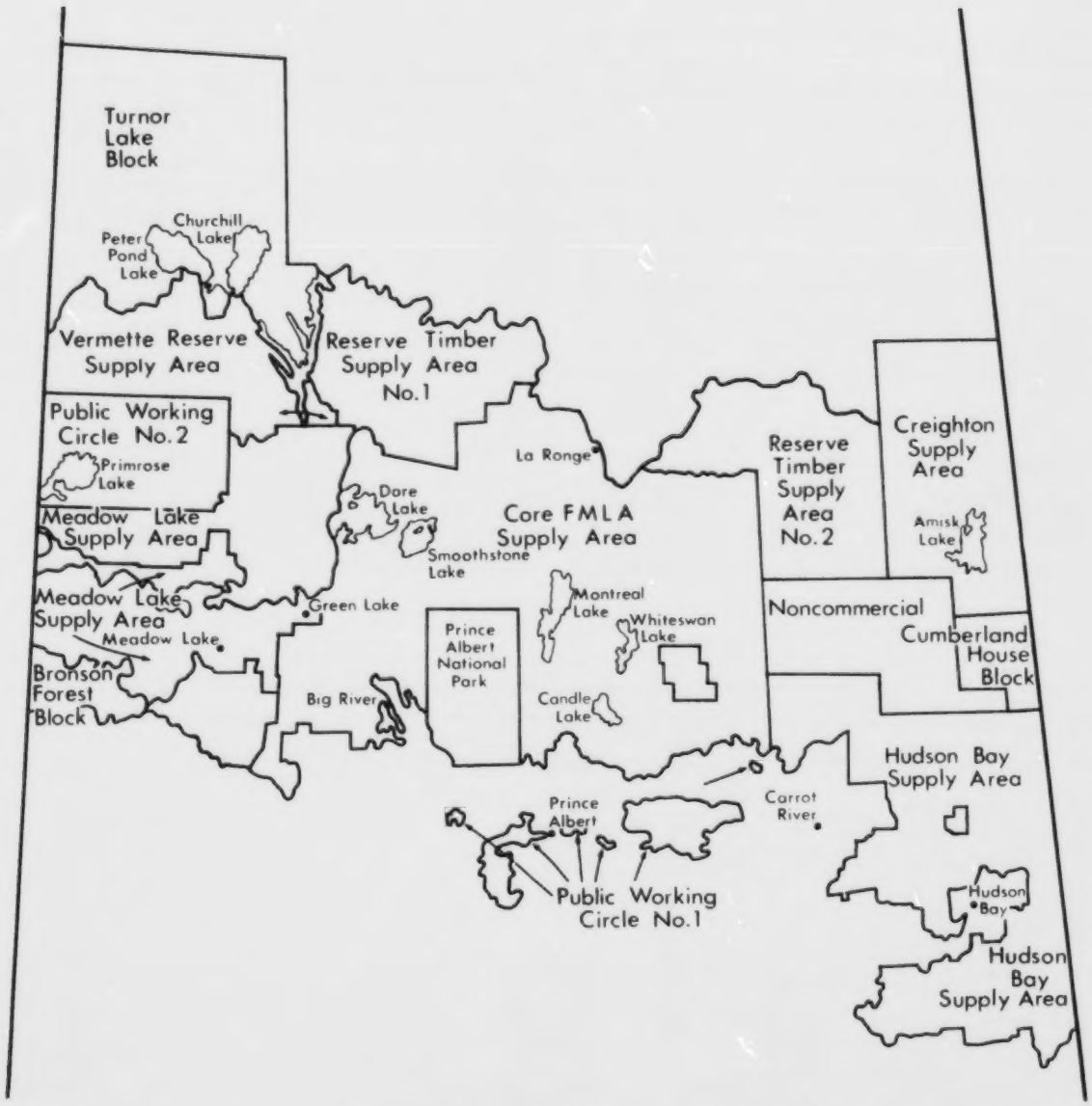

Figure 5. Timber supply areas within the Commercial Forest Zone. (Source: Saskatchewan Parks, Recreation and Culture, Forestry Branch.)

negotiated at $\$2.25/m^3$, with a differential rate of $\$0.50/m^3$ for distant timber. In one agreement, a blended base rate of dues has been negotiated at $\$1.25/m^3$. In all cases, dues have been fixed for 5 years and will be adjusted using a market price index for every 5 years thereafter.

For wood users not operating under an FMLA, crown timber dues will be increased to approximate FMLA rates. These increases will be incorporated in amendments to the Forest Act and Regulations planned for 1988. In addition, these smaller operators will be expected to contribute to FMLA reforestation funds when operating on FMLA lands or to a provincially managed fund when operating on non-FMLA lands.

Harvest Volume Schedule and Long Run Sustained Yield

Saskatchewan's Commercial Forest Zone contains approximately 6 976 000 m^3 of annual Harvest Volume Schedule (HVS) distributed over 129 000 km^2 of commercial forest land. The HVS predicts the amount of wood that will become available over the rotation of the timber, e.g., about 90 years, on an annual basis. Reductions are made for timber loss due to fire, waste, decay, and land withdrawals. In terms of merchantable volume and forest land area, Saskatchewan ranks sixth among Canadian provinces. The HVS is used to calculate the supply picture of mature wood by type, size class (product), and decay over a planning horizon of about one crop rotation[2].

The current practice in Saskatchewan is to establish timber supply estimates and harvest volume schedules for each FMLA and timber supply area throughout the Commercial Forest Zone (see Fig. 5). Long Run Sustained Yield (LRSY), defined as the estimated amount of merchantable fiber that could be harvested annually from the managed forest, is used as a benchmark of land capability. LRSY assumes a balance between depletion and renewal; specifically, that cutovers will be adequately regenerated with new forest. Thus, if renewal does not match depletion, LRSY declines.

Softwood and hardwood Long Run Sustained Yields and Harvest Volume Schedules for Saskatchewan forest supply areas are shown in Figures 6 and 7.

Forest Depletions

Harvest Volume Schedules in Saskatchewan are calculated to include estimates of forest depletions from factors other than harvesting, such as fire, decay, incomplete utilization (i.e., waste), and land withdrawals. Estimates of these annual depletions are deducted from gross HVS amounts to determine net amounts of timber available for harvest in each supply area. Total depletions to Saskatchewan's wood supply, including harvest, are illustrated in Figures 8 and 9.

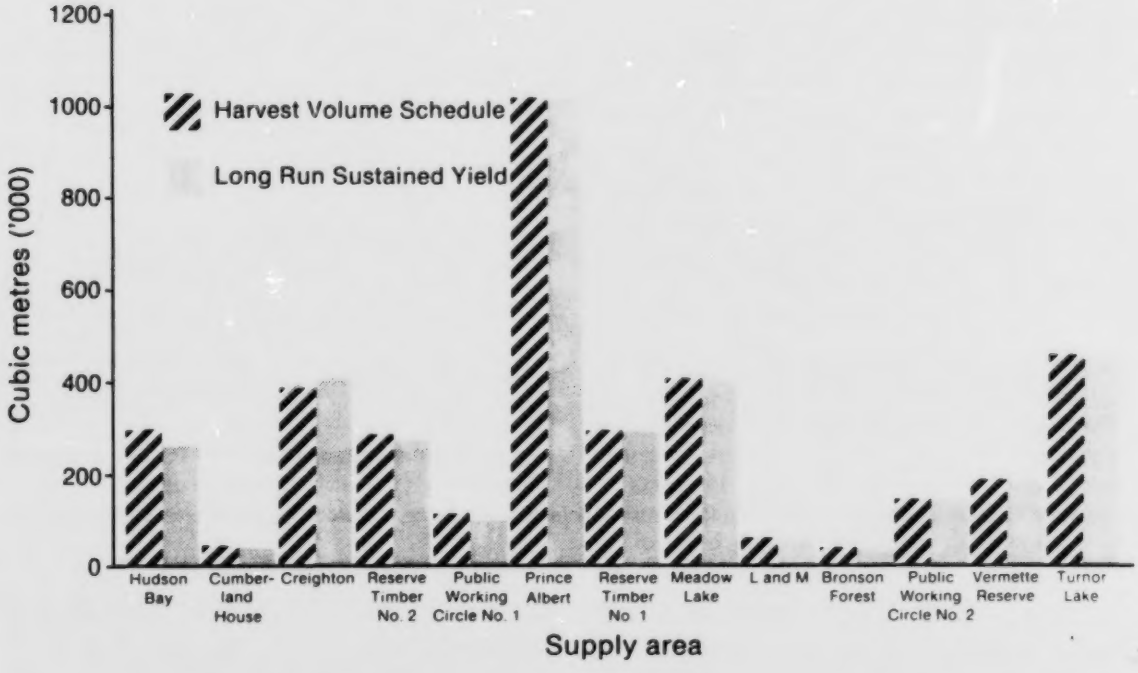

Figure 6. Long Run Sustained Yield and Harvest Volume Schedule: softwood. (Source: Saskatchewan Parks, Recreation and Culture, Forestry Branch.)

[2] A rotation is the period of time required to grow timber crops to a specified condition of maturity—from harvest cut to harvest cut. In Saskatchewan, rotation length may vary from 40 to over 100 years, depending upon site conditions and desired product.

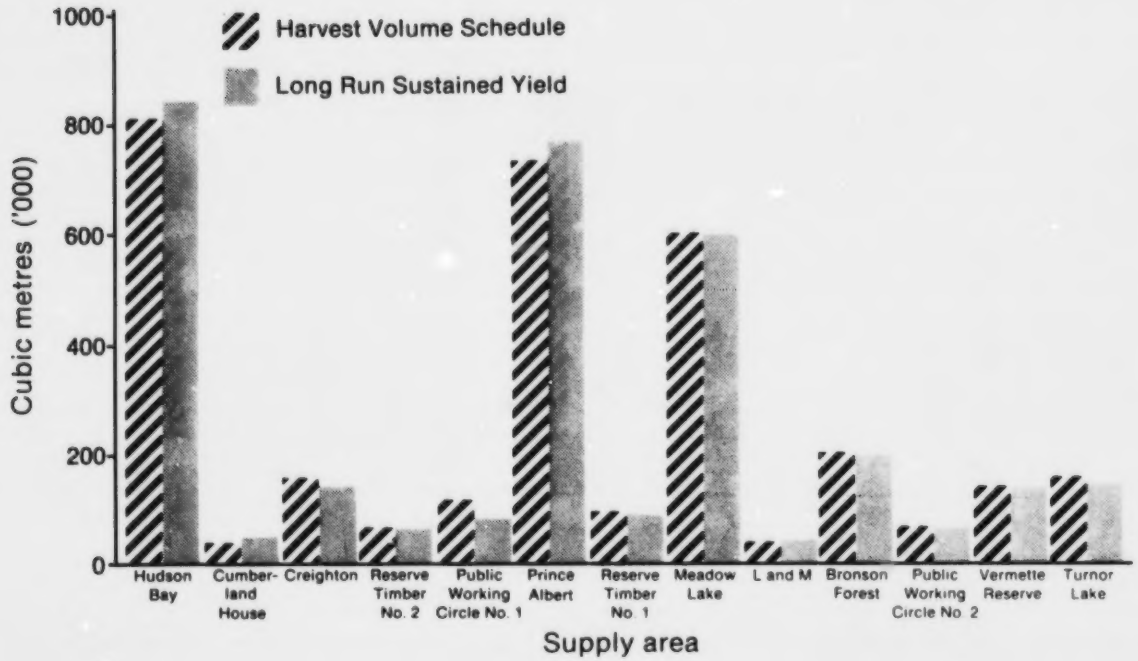

Figure 7. Long Run Sustained Yield and Harvest Volume Schedule: hardwood. (Source: Saskatchewan Parks, Recreation and Culture, Forestry Branch.)

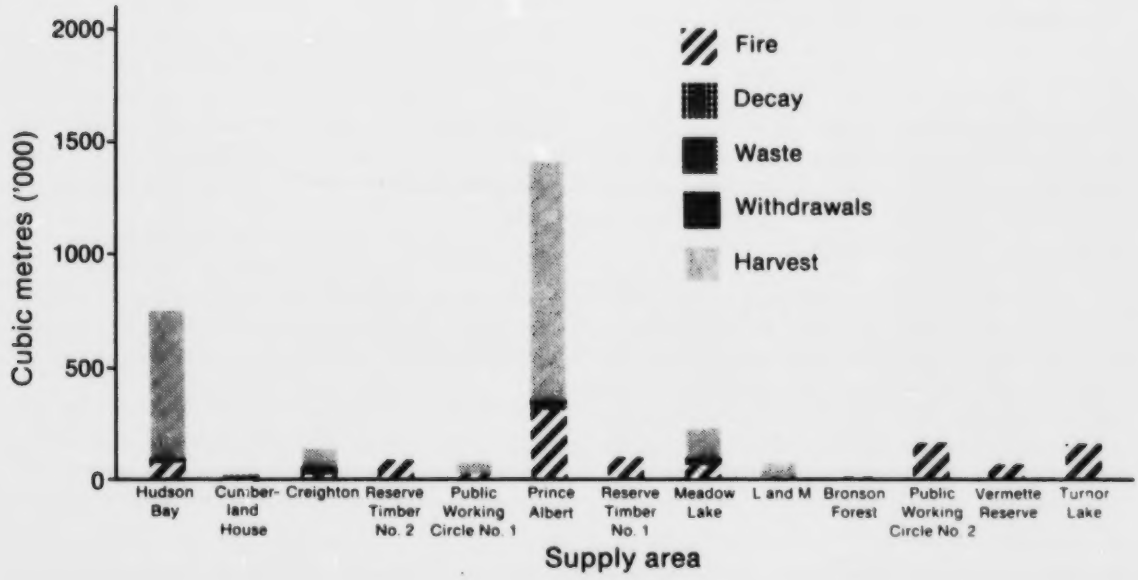

Figure 8. Annual depletions to the available softwood supply. (Source: Saskatchewan Parks, Recreation and Culture, Forestry Branch.)

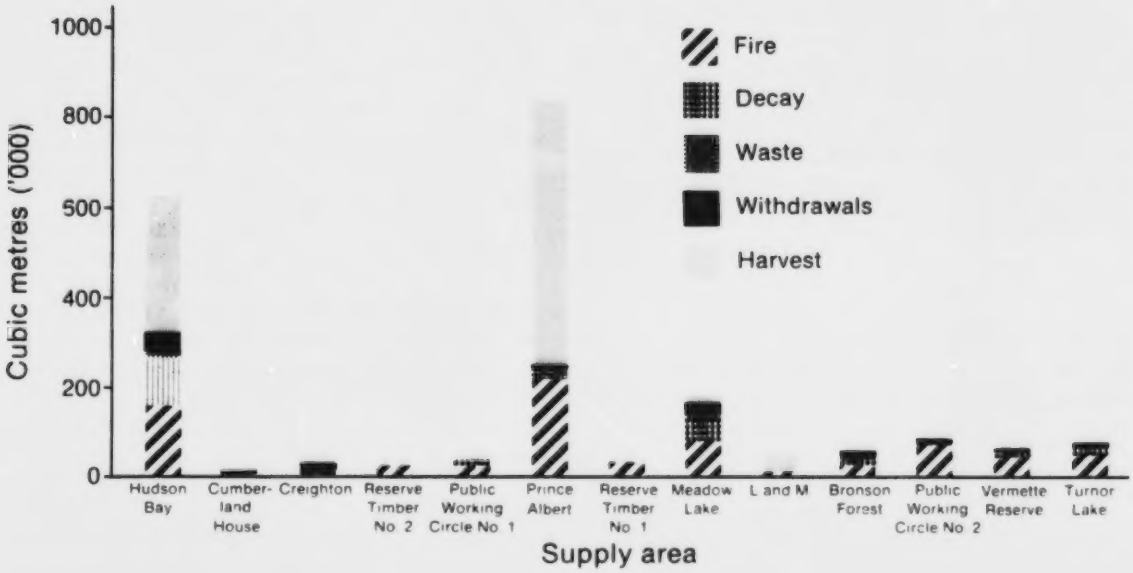

Figure 9. Annual depletions to the available hardwood supply. (Source: Saskatchewan Parks, Recreation and Culture, Forestry Branch.)

It is important to note that timber harvesting accounts for 64% of the estimated total softwood depletion and 45% of the estimated total hardwood depletion. Estimated annual losses to forest fire equal 1.8 million m^3 of wood fiber (softwood and hardwood combined), 33% of total depletions.

Forest Balance

In the forest industry, as with a bank account, subtracting estimated depletions from gross available supply yields balance. A positive forest balance reflects a surplus of wood fiber, whereas a negative balance indicates that removals (e.g., fire, harvesting) are exceeding forest growth. In Saskatchewan, an annual surplus of 1.633 million m^3 of softwood timber exists. Of the 13 supply areas, 10 have a softwood surplus; one, the L & M supply area, is fully allocated (i.e., no surplus, no deficit); and the remaining two, Prince Albert and Hudson Bay, have a softwood deficit (Fig. 10)[3]. Thus, in spite of a softwood fiber surplus at the provincial level, localized wood shortages do exist. Consequently, further expansion of the softwood-dependent industry must be strategically located so as not to exacerbate any existing wood shortages. Large softwood surpluses can be found in the Turnor Lake, Reserve Timber No. 2, and Meadow Lake supply areas.

The hardwood timber supply is also in a surplus situation in Saskatchewan. Approximately 2.277 million m^3 of hardwood timber supply remains unallocated and available annually. With the exception of L & M, where the hardwood resource is fully allocated, surpluses exist in every supply area (Fig. 11).

Based solely on fiber availability, Saskatchewan's hardwoods, particularly aspen, present the greatest potential for industrial development. Over 57% of the hardwood surplus is concentrated in the Hudson Bay, Meadow Lake, and Bronson Forest supply areas.

The impression of an immediately available timber surplus is somewhat misleading. Incomplete utilization of gross available supply arises because some of the surplus volume is economically inaccessible. Nilsson[4]

[3]Since 1984, changes to the administrative structure of the Prince Albert core area and reductions in the softwood harvest have eliminated this timber deficit.

[4]Nilsson, S. 1983. Analysis of economically accessible timber supply in Canada. Unpublished paper presented at the University of Alberta, Department of Rural Economy, Edmonton, Alberta.

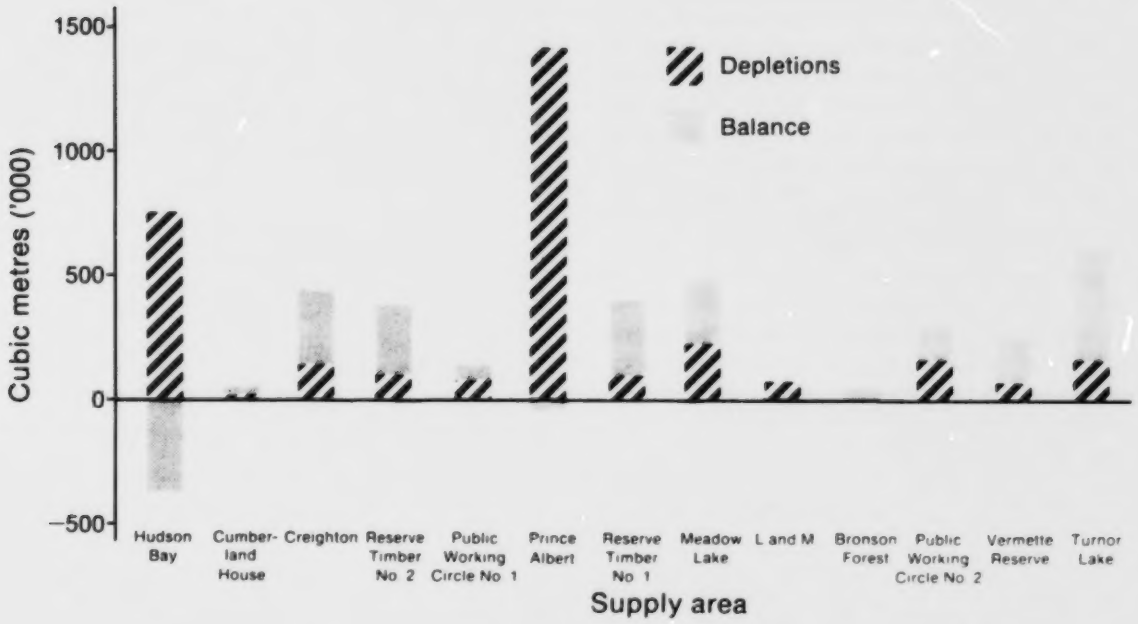

Figure 10. Annual softwood forest balance by supply area. (Source: Saskatchewan Parks, Recreation and Culture, Forestry Branch.)

Figure 11. Annual hardwood forest balance by supply area. (Source: Saskatchewan Parks, Recreation and Culture, Forestry Branch.)

(1983) estimated that 50% of the softwood surplus and 15% of the hardwood surplus were economically inoperable under then-current market conditions. This is due in large part to lack of road access to forest stands. In Saskatchewan, the Commercial Forest Zone is located in the north-central portion of the province, where the transportation network is limited. Consequently, utilization of the resource incurs significant hauling costs. Poor access is just one factor influencing operability; small tree diameters, low volumes per hectare, unsuitable tree species, and small stand areas also render portions of the surplus economically inaccessible.

Nonetheless, an economically viable fiber surplus does exist. Using Nilsson's estimates of operability, Saskatchewan has economical softwood and hardwood surpluses of 817 000 m^3 and 1 935 000 m^3, respectively.

Status of Forest Management

During 1985-86, over 10 million seedlings were planted in Saskatchewan. This includes 7.8 million planted by the government and 2.3 million by industry. In addition, approximately 1950 hectares were scarified. This level of forest management was achieved at a cost of $1.55 million to the government and is considered comparable with the previous year's silviculture program.

Saskatchewan is seriously committed to increasing forest management activities in the province. In the past, a growing amount of Not Sufficiently Restocked (NSR) lands had developed in readily accessible areas, representing lost potential harvests for the industry. Since 1970 significant increases have been made in the area of harvested lands receiving some form of silvicultural treatment. For example, while in

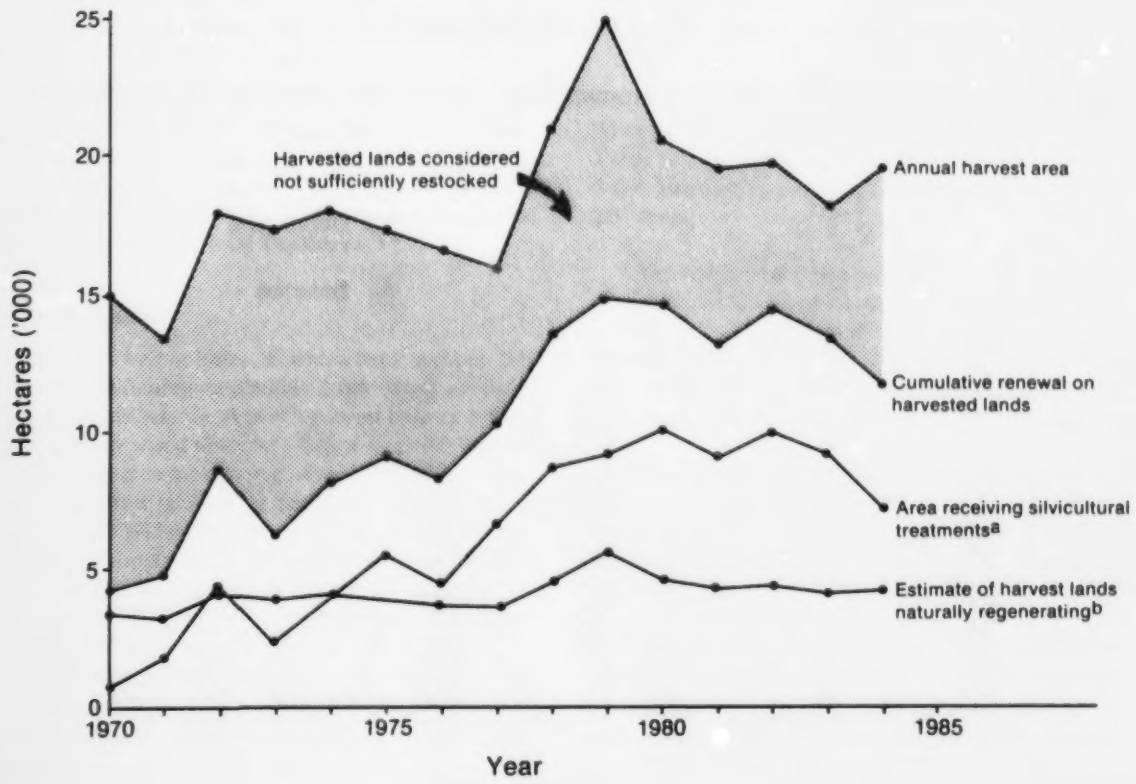

Figure 12. Area harvested and reforested. (Source: Saskatchewan Parks, Recreation and Culture, Forestry Branch.)

1970 only about 800 hectares were planted, over 7500 hectares were scarified and planted in 1985 (Fig. 12).

Over the next few years, an increasing amount of basic forest management responsibility will shift from the government to wood-using industries (Fig. 13). Specifically, under new Forest Management Licence Agreements, those who harvest wood will be required to undertake appropriate forest renewal programs. In addition, small independents who may be harvesting on an FMLA area will be required to contribute to a Forest Renewal and Development Management Fund administered by the licencee; similarly, pending changes to government legislation and regulations will require wood users operating on unleased forest lands to contribute to a government-administered renewal fund.

As these new-generation FMLAs are ratified, and as amended legislation and regulations come into force, the focus of provincial government forest renewal programs will change as well. In future, the primary role of provincial government forest renewal programming will be the identification of lands previously denuded by harvest or fire, with a view to cataloguing the state and condition of Saskatchewan forest lands and, where necessary, undertaking appropriate forest renewal to bring these lands back into production. In addition, the province retains the responsibility to provide nursery seedlings to both government and industry forest renewal programs.

As a beneficiary of forest resource use, the federal government also has a responsibility to contribute to the maintenance and enhancement of the forest resource. With this responsibility in mind, the federal and provincial governments entered into the Canada-Saskatchewan Forest Resource Development Agreement in 1984. Over the 5-year term of the agreement, the federal government will expend nearly $10 million on forest renewal, growth enhancement, and nursery development.

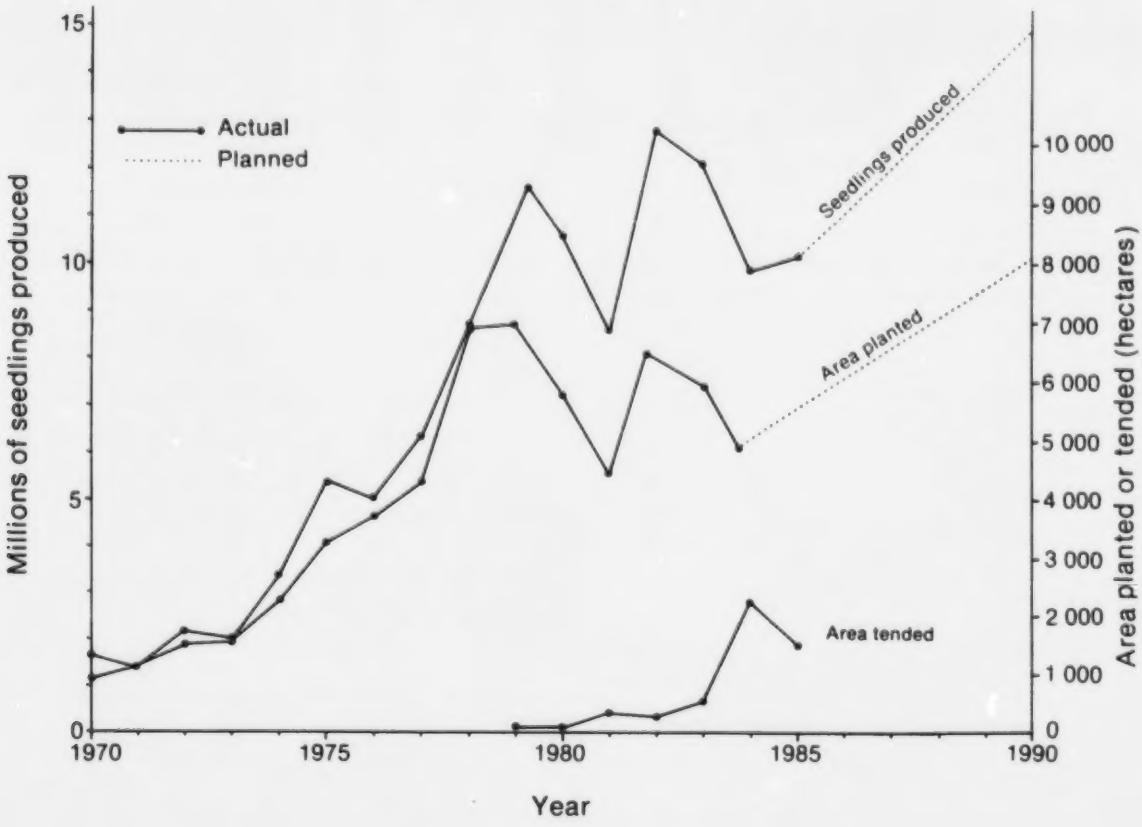

Figure 13. Present and projected regeneration effort. (Source: Saskatchewan Parks, Recreation and Culture, Forestry Branch.)

Figure 14 illustrates silviculture expenditures during 1975-84. It is notable that the peak period for silviculture expenditures in the province was 1979-82, when a federal-provincial cost-shared agreement was in place. With a replacement agreement now in effect, and with FMLA negotiations well advanced, Saskatchewan looks forward to increased commitment to achieving provincial silviculture objectives.

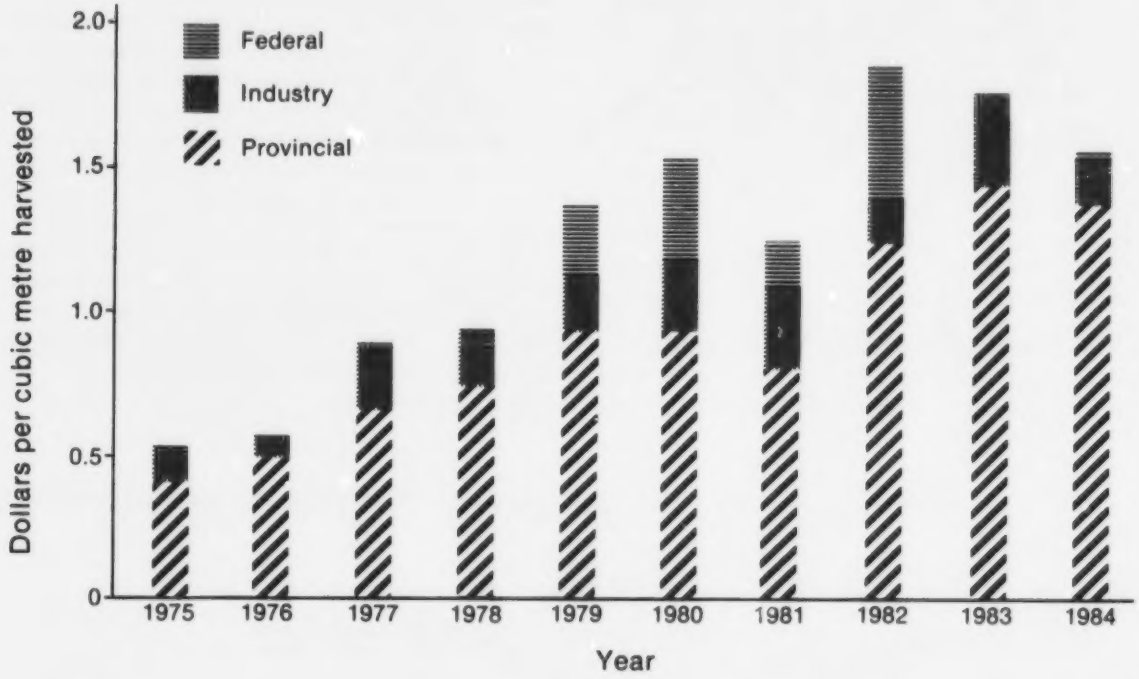

Figure 14. Expenditures on silviculture operations in current dollars per cubic metre harvested. (Source: Saskatchewan Parks, Recreation and Culture, Forestry Branch.)

CHAPTER III

THE FOREST INDUSTRY OF SASKATCHEWAN: A PERSPECTIVE

Industrial Structure

In 1985, Saskatchewan's primary wood-using industry was made up of 180 firms that manufactured a variety of forest products. Based on product output and mill facilities, these firms are organized into five distinct industry groups: sawmills (with or without associated planing facilities); independent planing mills; wood-treating plants; miscellaneous mills; and plywood, waferboard, and pulp mills (Table 2).

During 1980-85, there have been both structural changes and declines in production, as the total number of wood-processing plants (including small sawmills of less than 100 M (thousand) fbm (foot board measure)) in Saskatchewan declined from 309 to 180 (Fig. 15). Each industry group has been affected differently. The largest declines were in sawmills in the 100 M to 1 MM (million) fbm annual production range as well as independent planing mills, with smaller declines in the wood-treating and miscellaneous wood-using industries.

Since 1984, there has been sustained economic growth; however, Saskatchewan's forest industry has not yet recovered to the peak prerecession levels. This chapter provides detailed descriptions of the status and changes within each industry group.

Sawmills

Saskatchewan's sawmilling sector is composed of a large number of fairly small firms. In total, 160 mills produced over 240 million fbm of sawn products in 1985. Production within this industry group was not evenly distributed, as a wide range of technologies was applied in the manufacture of sawn products. Consequently, this group was subdivided to describe

Table 2. Saskatchewan's forest industry, 1985

Industry group	Number of firms	Percent of total firms	Survey intensity (%)
Sawmills			
Greater than 5 MM fbm	6	3	100
1 MM to 5 MM fbm	4	2	100
100 M to 1 MM fbm	34	19	100
Less than 100 M fbm[a]	116	64	N/A[b]
Independent planing mills	2	1	100
Wood-treating plants	12	7	100
Pulp mills	1	1	100
Waferboard mills	1	1	100
Plywood mills	1	1	100
Miscellaneous wood-using mills	3	2	100
Total	180	100	

[a] Source: Saskatchewan Parks, Recreation and Culture, Forestry Branch.
[b] Not available.

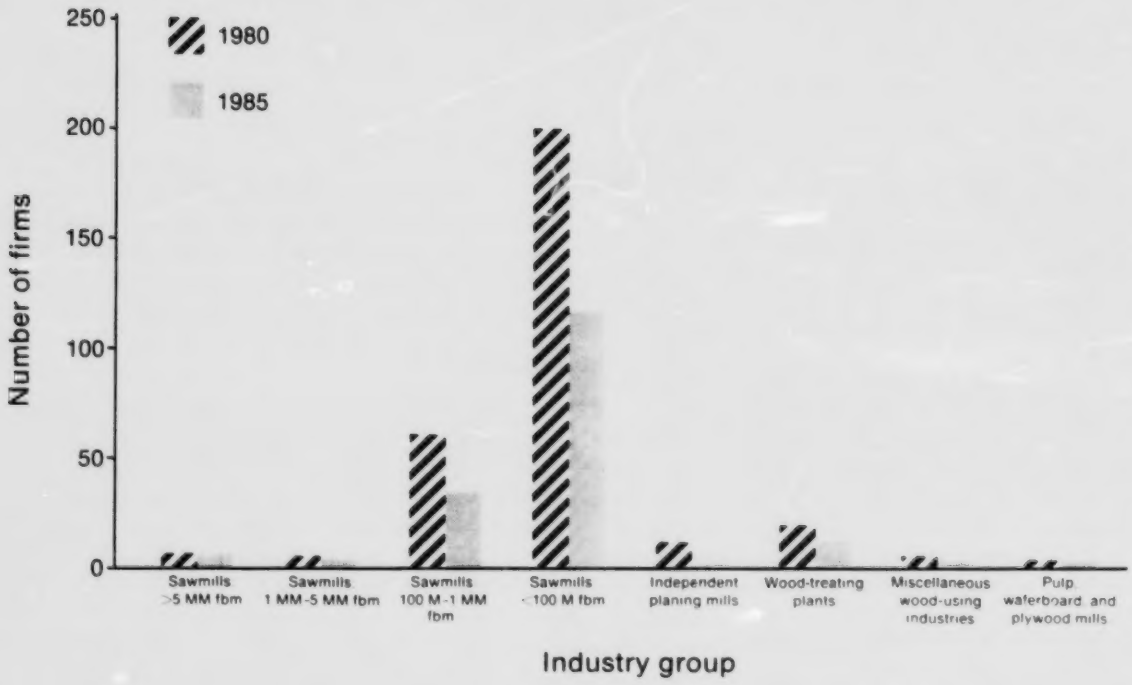

Figure 15. Changes in Saskatchewan's forest industry, 1980-85.

the variation within the provincial sawmill industry more accurately.

The sawmill industry was significantly affected by the 1981-83 recession. Since the last survey in 1980, the total number of sawmills declined by 41%; however, this significant decline occurred only in small mills under 1 MM fbm annual production. Total production over the same period increased by 10% (Table 3). Not all firms were as affected by the recession; the largest mills, with annual production exceeding 5 MM fbm, were able to increase their production by 18% over 1980 levels. This increase came at the expense of the small sawmill category, which registered declines in production from 26 to 45%.

The drop in the number and production of small sawmills is in direct response to low lumber prices, difficult market conditions of recent years, and large sawlog shortages in some regions of the province. The last survey was conducted in 1980, a peak year in Canadian lumber production. This partially explains the dramatic changes in the sawmill industry, as many of the small sawmills are swing suppliers, moving into and out of the marketplace, depending upon lumber prices. Generally, the smaller mills are marginal producers that lack competitive ability due to inefficient or outdated technology. The result is to amplify the boom-and-bust cycle characteristic of the lumber business. On the other hand, the larger sawmills use advanced sawing technology and are more efficient producers of lumber. Additionally, these larger mills are well-established in the forest industry and are in a stronger position to weather cyclic market fluctuations.

As the smaller, less-competitive mills left the marketplace, Saskatchewan's sawmill industry became more concentrated. Concentration of production is a concept used to measure the degree to which total production is distributed among firms. Usually concentration of production is reported for the largest 4, 8, and 20 firms; however, for the purpose of this report it will be reported by sawmill size category.

The Saskatchewan sawmill industry is very concentrated, as the largest six sawmills (3.8% of the total mills in the province) produced over 91.6% of all

Table 3. Saskatchewan's sawmill industry, 1980-85

Sawmill size category	Number of firms		Percent change	Production (MM fbm)		Percent change
	1980	1985		1980	1985	
Greater than 5 MM fbm	6	6	0	185.9	220.1	+18.4
1 MM to 5 MM fbm	5	4	-20.0	9.1	6.7	-26.4
100 M to 1 MM fbm	60	34	-43.3	17.5	9.6	-45.1
Less than 100 M fbm	200	116	-42.0	5.9	3.8	-35.6
Total	271	160	-41.0	218.4	240.2	+10.0

sawn products (Table 4). The trend to fewer, larger mills is one that has been evident in Saskatchewan for some time (Fig. 16). The sawmill industry adjusts the scale or size of operation in response to what is perceived as the optimum quantity or range of product output (Dobie 1973); individual firms attempt to move toward the optimal production level in an effort to remain competitive.

Table 4. Concentration of production in Saskatchewan's sawmill industry, 1985

Sawmill size category	Cumulative number of mills	Cumulative percent of mills	Cumulative percent of total production
Greater than 5 MM fbm	6	3.8	91.6
1 MM to 5 MM fbm	10	6.2	94.4
100 M to 1 MM fbm	44	27.5	98.4
Less than 100 M fbm	160	100.0	100.0

Although large sawmills are responsible for the bulk of lumber production, smaller mills continue to play an important role in local economies and resource conservation by:

1. generating primary and supplementary income for full- and part-time independent operators;
2. providing a source of low-cost building materials for local economies; and
3. utilizing small, isolated tracts of timber that are uneconomical for larger operators.

The type of sawmill ownership varied with mill size (Fig. 17). Larger sawmills were either crown corporations or limited liability corporations, while smaller mills were usually single proprietorships or partnerships.

Independent Planing Mills

Independent planing mills purchase rough sawn material to finish and market. In 1985 only two independent planing mills were in operation, with total production equal to 8 MM fbm. This industry group was severely affected by the past recession, as the number of firms declined by 81% and production dropped by 38%. Currently, one mill is held as a crown corporation while the other is structured as a single proprietor-partnership. Both of these firms cited market fluctuations as the primary factor limiting future expansion.

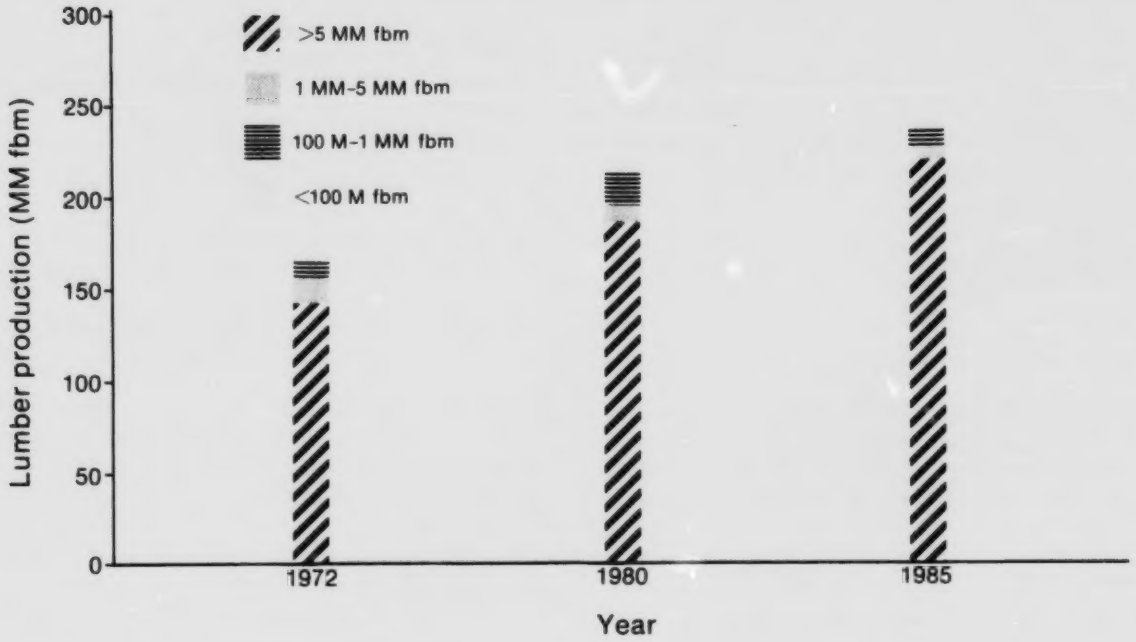

Figure 16. Lumber production trends in Saskatchewan's sawmill industry.

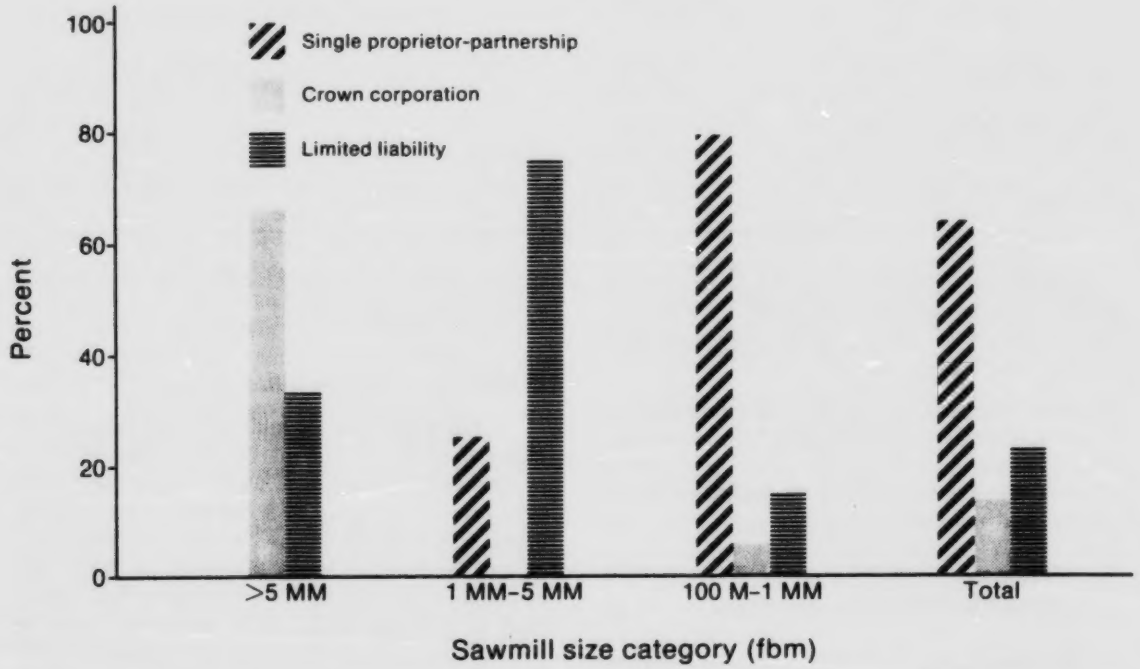

Figure 17. Sawmill ownership in Saskatchewan, 1985.

Wood-treating Plants

A total of 12 wood preservation plants operated in Saskatchewan in 1985. Products of this industry group include treated posts, poles, rails, lumber, and plywood. Plants used pentachlorophenol and diesel fuel mix or a chromated copper arsenate (CCA) and water mix in treating wood materials.

Production fell 35% from the 1980 survey levels, as seven firms (37% of the total number) left the industry. Ownership of the firms was evenly distributed between single proprietor-partnerships and limited liability corporations; however, one crown corporation also existed (Fig. 18).

Miscellaneous Wood-using Industries

The miscellaneous wood-using industry group was comprised of three plants that manufactured house logs, precut log homes, and lath. Pallet plants were not included in this report as they were considered a secondary wood-using industry. Type of ownership within this industry group was evenly distributed among single proprietor-partnership, crown corporation, and limited liability corporation.

Pulp, Waferboard, and Plywood Mills

The pulp, waferboard, and plywood industry group dominates Saskatchewan's forest industry. This industry group is composed of a bleached kraft pulp mill, a waferboard and sheathing panel mill, and a softwood plywood mill.

The Weyerhaeuser pulp mill, located in Prince Albert, is one of the larger bleached kraft pulp producers and forestry enterprises in the prairie provinces. The mill was constructed in 1968 and was purchased from the Saskatchewan government in 1986 by Weyerhaeuser Canada Ltd. In 1985 the mill, operated by the Prince Albert Pulp Company (PAPCO), produced 264 000 tonnes of bleached kraft (sulfate) pulp. The pulp is well-known for its strength, brightness, and quality. Construction for pulp mill expansion and a paper mill to supplement Weyerhaeuser's existing Prince Albert facilities is under way.

Another large member of this group is MacMillan Bloedel Industries Ltd., which operates a waferboard and sheathing panel mill in Hudson Bay. Production at this mill in 1985 was 1050 million sq. ft. (1/16-in. basis), up almost 15% from 1980 surveyed production levels. Waferboard, used in the construction industry, is the plant's primary product and is commonly marketed under the Aspenite trademark.

A plywood mill operated by Saskatchewan Forest Products Corporation and located in Hudson Bay is the other firm in this industry group. Panel production in 1985 was 80.6 million sq. ft. (3/8-in. basis), 15% greater than that of 1980. This mill is the only crown corporation in this industry group, the other two mills being limited liability corporations.

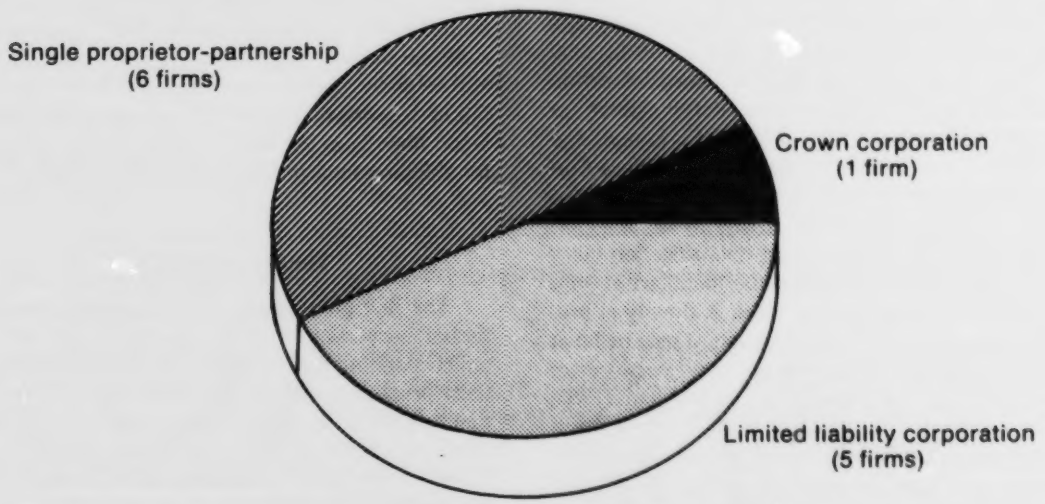

Figure 18. Ownership of Saskatchewan's wood-treating plants, 1985.

Forest Industry Integration

Generally, three forms of industrial integration can be identified in Saskatchewan's forestry sector: vertical integration, horizontal integration, and conglomeration or product diversification. Vertical integration takes place when one firm undertakes successive stages of a manufacturing process. In the forest industry, a vertically integrated firm would harvest the timber, transport it to the mill, manufacture it into pulp or lumber, and market these products. In practice, only a few firms are fully vertically integrated (i.e., control the entire logging, manufacturing, and marketing process), while the majority of firms implement just two or three production phases (most commonly, logging and primary processing).

There are several reasons for undertaking vertical integration. In the forest industry it is important is to ensure a stable supply of raw materials. This is especially true for large manufacturing complexes with high start-up and shut-down costs. Other reasons include capturing technical economies such as coordination of operations and scheduling. In Saskatchewan, 60 firms can be considered vertically integrated (Table 5). Of these 60 firms, over 93% are integrated back into logging operations. The size of firm engaged in vertical integration ranges from small sawmills in the 100 M to 1 MM fbm size category to the large kraft pulp mill operated by Weyerhauser Canada Ltd.

Horizontal integration takes place when one firm has a number of geographically distinct plants producing the same product. The motivation for horizontal integration is to achieve economies of production because, in some cases, the most economically efficient size of a plant is small. In Saskatchewan, only two firms may be considered as horizontally integrated. These firms are Northern Forest Operations Ltd., with sawmills in Green Lake, La Ronge, and Weyakwin, and Saskatchewan Forest Products Corporation, with sawmills at Big River and Carrot River.

Conglomeration or product diversification takes place when a firm undertakes the manufacture of a new product related to that which is already in production (Schwindt 1985). For example, a pulp mill that adds a sawmill to its operations now has two processes using the same raw material, wood. Schwindt (1985) found that while this definition is straightforward, it is more difficult to identify which products should be considered related. Generally, an arbitrary rule must be used. For the purpose of this report, vertical integration and product diversification have been treated as two completely distinct descriptors of the forest industry.

In Saskatchewan, four firms have undertaken product diversification. These firms are L & M Wood Products Ltd. (one sawmill and one wood-treating plant); Northern Forest Operations Ltd. (three sawmills, one planing mill, and one building timber plant); Weyerhaeuser Canada Ltd. (one sawmill and one bleached kraft pulp mill); and Saskatchewan Forest Products Corporation (two sawmills, one plywood mill, one wood-treating plant). In addition to these operations, two other firms have parent companies that are both diversified and horizontally integrated. MacMillan Bloedel Industries Ltd. is owned by MacMillan Bloedel Ltd., a large forest company that manufactures pulp, paper, lumber, and plywood as well as the waferboard produced in Saskatchewan. Simpson Timber (Saskatchewan) Ltd. is owned by Simpson Timber Co., a U.S. forest products company based in Seattle, Washington.

Regional Distribution of Saskatchewan's Forest Industry

Forest industries are most often located near sources of roundwood inputs, as it is more economical to minimize the haul distance for wood fiber inputs and ship processed forest products to distant markets.

Saskatchewan's primary wood-using industry is concentrated in three regions: Meadow Lake, Prince Albert, and Hudson Bay (Fig. 19; Tables 6 and 7). Together, these three regions account for 79.7% of all forestry operations in the province. As a group, they share two important characteristics: first, they contain sufficient timber supplies to support a forest industry; and secondly, they possess a well-developed transportation network that is not only necessary for getting wood fiber from the stump to the mill but is critical for shipping final products to distant markets.

Timber Harvesting

The first phase of the manufacturing process is timber harvesting. This is a complex operation in which standing trees are felled from the stump, partially processed, and transported to the mill. The actual operation of logging results from an extensive planning exercise. Prior to harvesting, foresters examine a timber stand to assess its merchantability. This involves determining whether the value of the timber exceeds harvesting and transportation costs. Site

Table. 5. Vertical integration[a] of Saskatchewan's forest industry, 1985 (number of firms)

Industry group	Logging, sawing, and planing	Logging and planing	Sawing and planing	Sawing only	Total
Sawmills					
Greater than 5 MM fbm	5	1	0	0	6
1 MM to 5 MM fbm	2	2	0	0	4
100 M to 1 MM fbm	11	22	0	1	34
Total	18	25	0	1	44

	Logging, sawing, and preserving	Logging and preserving	Sawing and preserving	Preserving only	Total
Wood-treating plants[b]	9	0	1	0	10

	Logging and processing	Processing only	Total
Miscellaneous wood-using plants			
House logs	1	1	2
Lath	1	0	1
Total	2	1	3

	Logging and processing	Processing only	Total
Pulp, waferboard, and plywood mills	2	1	3

[a] Many of the firms considered vertically integrated (with respect to logging) utilized contractors for part or all of their logging operations.
[b] Information unavailable for two firms.

factors such as tree size, species, age, and terrain influence the merchantability of every forest stand. The planning exercise also includes selecting a logging system, scheduling the harvesting operation, locating roads, and ensuring adequate regeneration of a new forest once harvesting has been completed.

In 1985, over 3.1 million m^3 of roundwood were procured by the forest industry. The majority of this wood (62%) was consumed by the pulp, plywood, and waferboard mills; the large sawmill category accounted for another 32.5% (Fig. 20). Technological change in the manufacture of forest products has

Table 6. Distribution of Saskatchewan's forest industry by industry group and forest region, 1985 (number of firms)

Industry group	Forest region								
	Meadow Lake	Prince Albert	Hudson Bay	La Ronge	Swift Current	Regina	Melville	Saskatoon	Total
Sawmills									
Greater than 5 MM fbm	3	2	1	0	0	0	0	0	6
1 MM to 5 MM fbm	0	3	0	1	0	0	0	0	4
100 M to 1 MM fbm	9	14	8	1	2	0	0	0	34
Independent planing mills	1	1	0	0	0	0	0	0	2
Wood-treating plants	2	10	0	0	0	0	0	0	12
Miscellaneous mills	1	1	0	1	0	0	0	0	3
Pulp, plywood, and waferboard mills	0	1	2	0	0	0	0	0	3
Total	16	32	11	3	2	0	0	0	64

Table 7. Saskatchewan's forest industry output by product type and forest region, 1985

Product	Forest region								
	Meadow Lake	Prince Albert	Hudson Bay	La Ronge	Swift Current	Regina	Melville	Saskatoon	Total
Dimension lumber (M fbm)	40 142	75 046	97 573	2 161	208	0	0	0	215 130
Boards (M fbm)	2 469	1 215	9 755	145	46	0	0	0	13 630
Timbers (M fbm)	4 951	646	37	0	93	0	0	0	5 727
Ties, unpreserved (M fbm)	351	622	0	0	0	0	0	0	973
Preserved lumber (M fbm)	12	4 218	0	0	0	0	0	0	230
Lath (bundles)	0	4 500	0	0	0	0	0	0	4 500
House logs (m^3)	550	0	0	495	0	0	0	0	1 045
Preserved posts and poles (m^3)	7 236	70 972	0	0	0	0	0	0	78 208
Wood chips (m^3)	50 800	143 100	201 000	0	0	0	0	0	394 900
Bleached kraft pulp (t)	0	264 400	0	0	0	0	0	0	264 400
Waferboard, 1/16 in. basis (M sq. ft.)	0	0	1 050 000	0	0	0	0	0	1 050 000
Plywood, 3/8 in. basis (M sq. ft.)	0	0	80 600	0	0	0	0	0	80 600

resulted in a more-complete utilization of the resource. An example is the increasing use of aspen/poplar. At one time these trees were left in the woods to rot, but technological advances have created a demand for this one-time weed species. Today, aspen/poplar makes up over 34% of the annual roundwood harvest (Fig. 21; Table 8). One industry group, the pulp, plywood, and waferboard mills, accounted for 99% of all aspen/poplar used in the province. Given the availability of the aspen resource and evolving manufacturing processes, the use of aspen will increase significantly in the future.

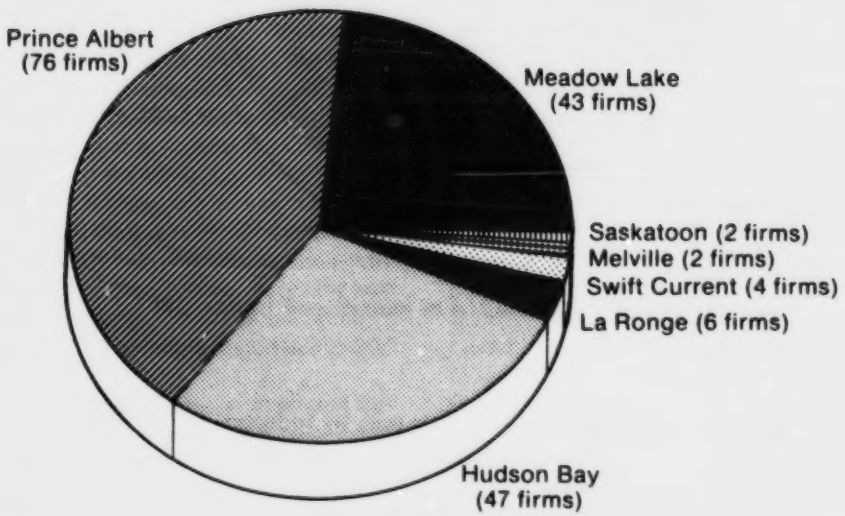

Figure 19. Regional distribution of Saskatchewan's forest industry, 1985.

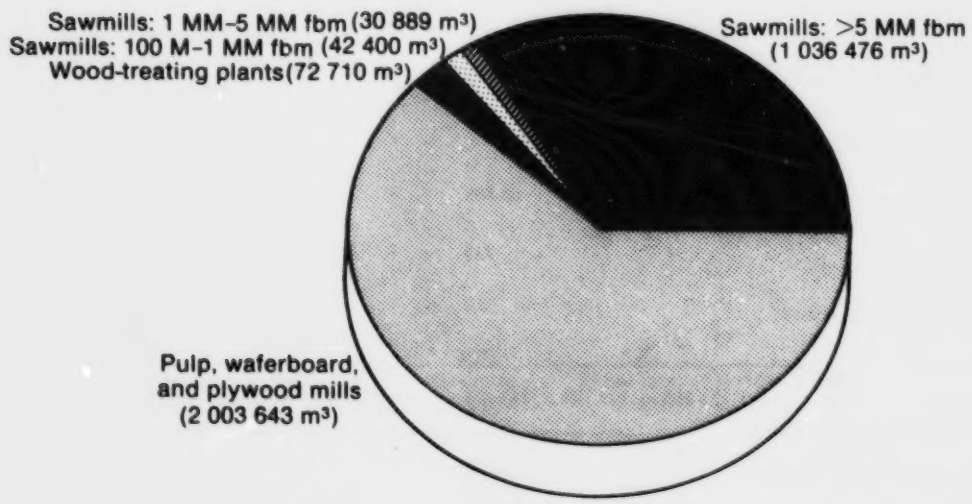
Sawmills: 1 MM–5 MM fbm (30 889 m³)
Sawmills: 100 M–1 MM fbm (42 400 m³)
Wood-treating plants (72 710 m³)
Sawmills: >5 MM fbm
(1 036 476 m³)
Pulp, waferboard,
and plywood mills
(2 003 643 m³)

Figure 20. Roundwood consumption by industry group, 1985.

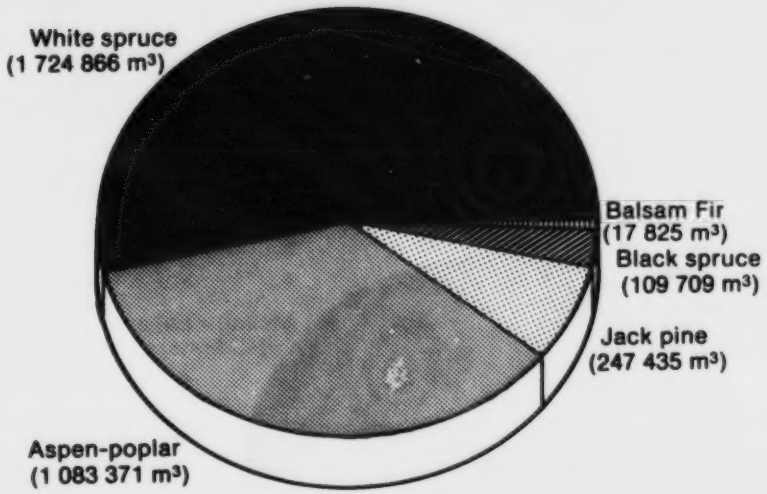

Figure 21. Species distribution of roundwood inputs, 1985.

Table 8. Species distribution of roundwood inputs (m³) by industry group, 1985

Industry group	Species							Total
	White spruce	Black spruce	Jack pine	Balsam fir	Aspen/ poplar	Other softwoods	Other hardwoods	
Sawmills								
Greater than 5 MM fbm	757 527	108 730	157 619	12 600	–[a]	–	–	1 036 476
1 MM to 5 MM fbm	18 941	–	11 948	–	–	–	–	30 889
100 M to 1 MM fbm	25 274	82	11 143	5 225	–	–	676	42 400
Independent planing mills	–	–	–	–	–	–	–	–
Wood-treating plants	1 801	897	66 509	–	6	3 497	–	72 710
Miscellaneous mills	27	–	216	–	1 018	–	–	1 261
Pulp, plywood, and waferboard mills	921 296	–	–	–	1 082 347	–	–	2 003 643
Total	1 724 866	109 709	247 435	17 825	1 083 371	3 497	676	3 187 379

[a] Dashes indicate no data available.

Almost all roundwood (99%) is obtained from provincial crown land. This reflects the land tenure characteristics of the province. Private woodlots and farm forests supply only 1% of the roundwood used by the forest industry. The wood-treating industry group is the only one that uses imported wood, from British Columbia and Manitoba; however, imports accounted for approximately 3% of their total roundwood inputs (Fig. 22).

In the forest industry, there has been a movement toward increased mechanization of timber harvesting. Simmons (1979) pointed to a chronic scarcity of woods labor as the main cause of this trend. In Saskatchewan, approximately 20-25% of the wood fiber is obtained through completely mechanized harvesting operations, that is, no person on the forest floor[5]. The majority of timber is harvested using a conventional cut and skid logging system. This is an extremely versatile system that entails manual felling and delimbing with chain saw, off-road transport with wheeled skidder, and mechanical processing into shortwood followed by transport to the mill or direct transport to the mill of tree-length material (Fig. 23).

The capital investment for this conventional logging system is quite low. Low start-up costs have allowed small-contract loggers to move into and out of the harvesting business more easily, depending upon market conditions. Productivity per person is low and therefore sensitive to rising labor costs. In Saskatchewan, it costs, on average, $24.76 to procure 1 m^3 of roundwood (Fig. 24). This cost breaks down into $5.31/$m^3$ for cutting, $9.86/$m^3$ for skidding, and $9.59/$m^3$ for hauling.

Average procurement costs range from a low of $12.73/$m^3$ for the small sawmills (i.e., annual production 100 M to 1 MM fbm) to $26.75/$m^3$ for the pulp, plywood, and waferboard mills. The smaller mills enjoy lower costs due mainly to shorter distances (Fig. 25). Smaller portable sawmills are highly mobile and are operated at the logging site, where timber is skidded direct from the stump to the mill.

Roundwood is transported to the mill by a variety of modes, including truck, rail, and skidder. Average haul distance for the industry is 107 km; however, there is great variability among mills, with haul distances ranging from less than 1 km (where skidders are used to haul roundwood to portable sawmills) to over 260 km (Fig. 26). It is over the long distances that rail transport becomes cost-effective. Only two firms shipped roundwood by rail, accounting for 10-15% of that individual mill's roundwood consumption.

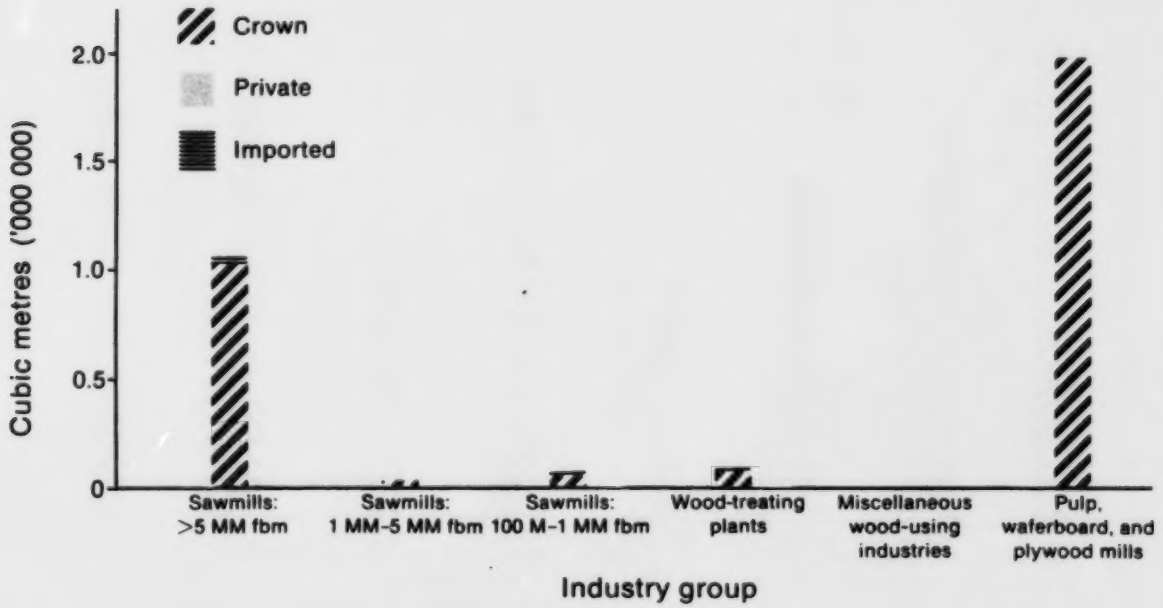

Figure 22. Quantity and source of roundwood inputs by industry group, 1985.

[5] Personal communication with R. Sexsmith, Weyerhaeuser Canada Ltd., Prince Albert, Saskatchewan.

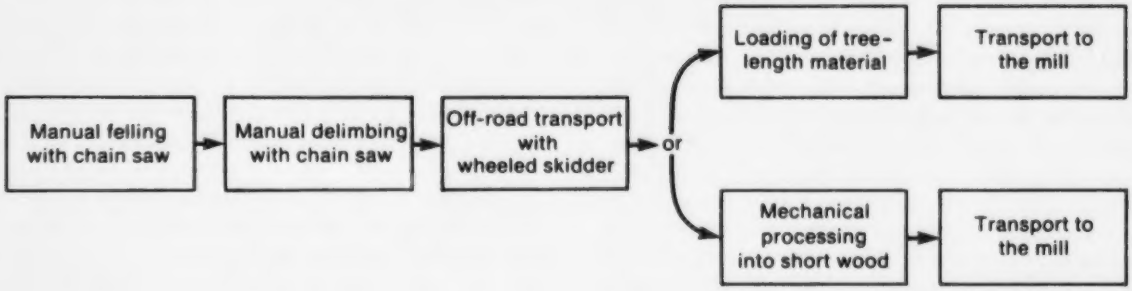
Manual felling with chain saw
Manual delimbing with chain saw
Off-road transport with wheeled skidder
or
Loading of tree-length material
Transport to the mill
Mechanical processing into short wood
Transport to the mill

Figure 23. The conventional logging system.

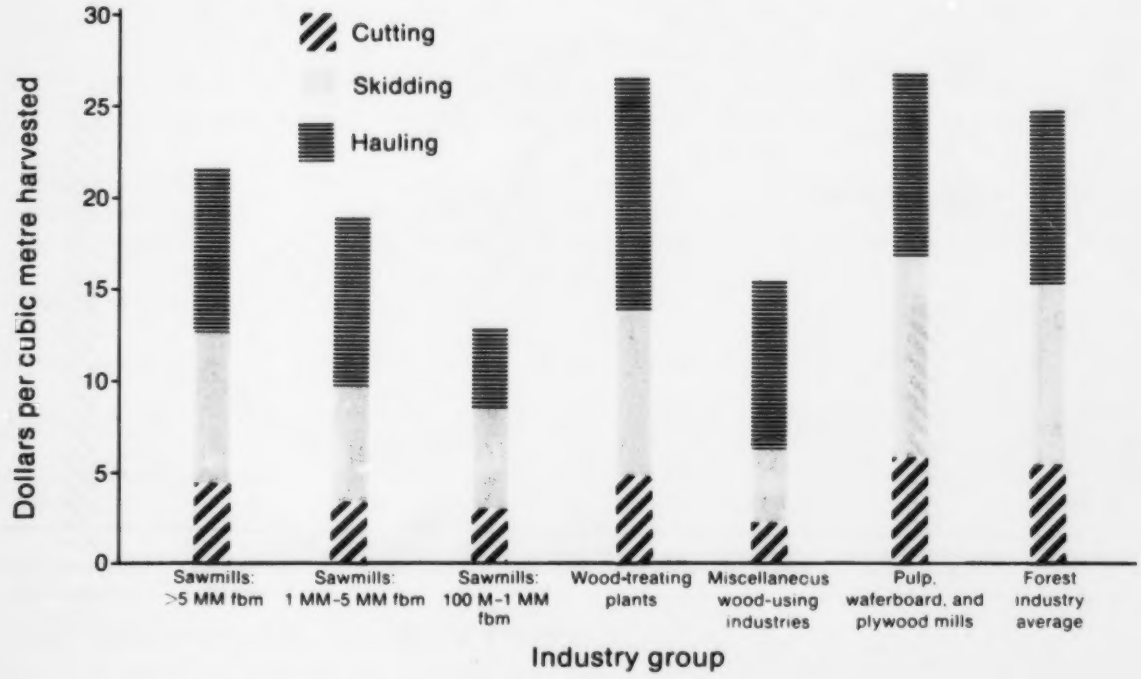

Figure 24. Average roundwood procurement cost by industry group, 1985.

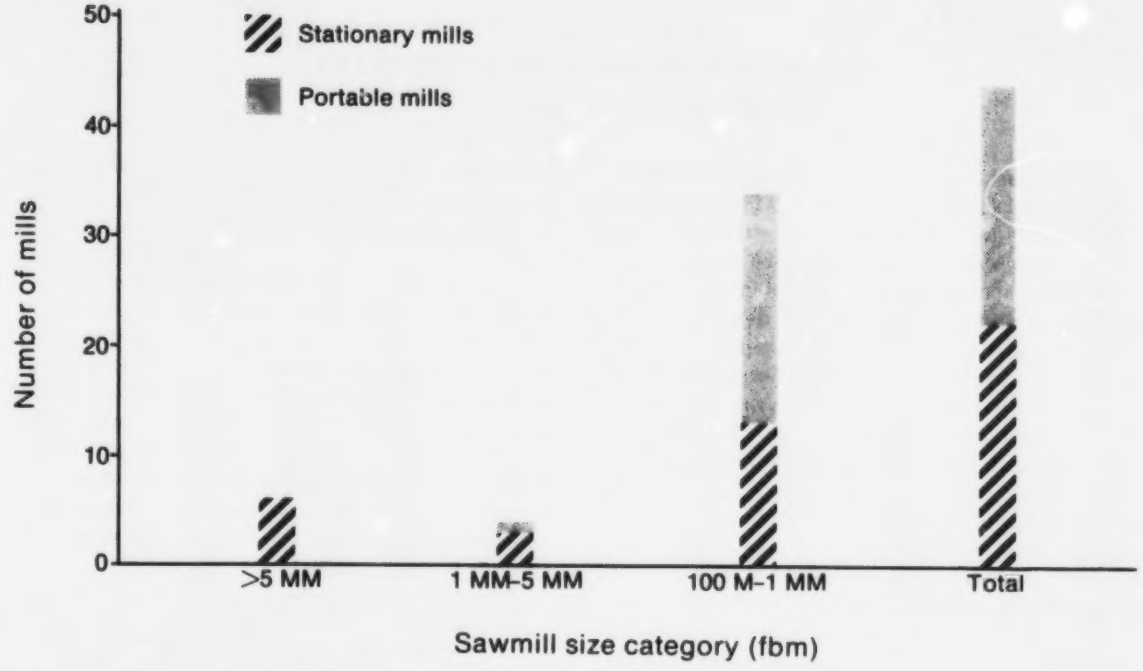

Figure 25. Mobility of Saskatchewan's sawmill industry, 1985.

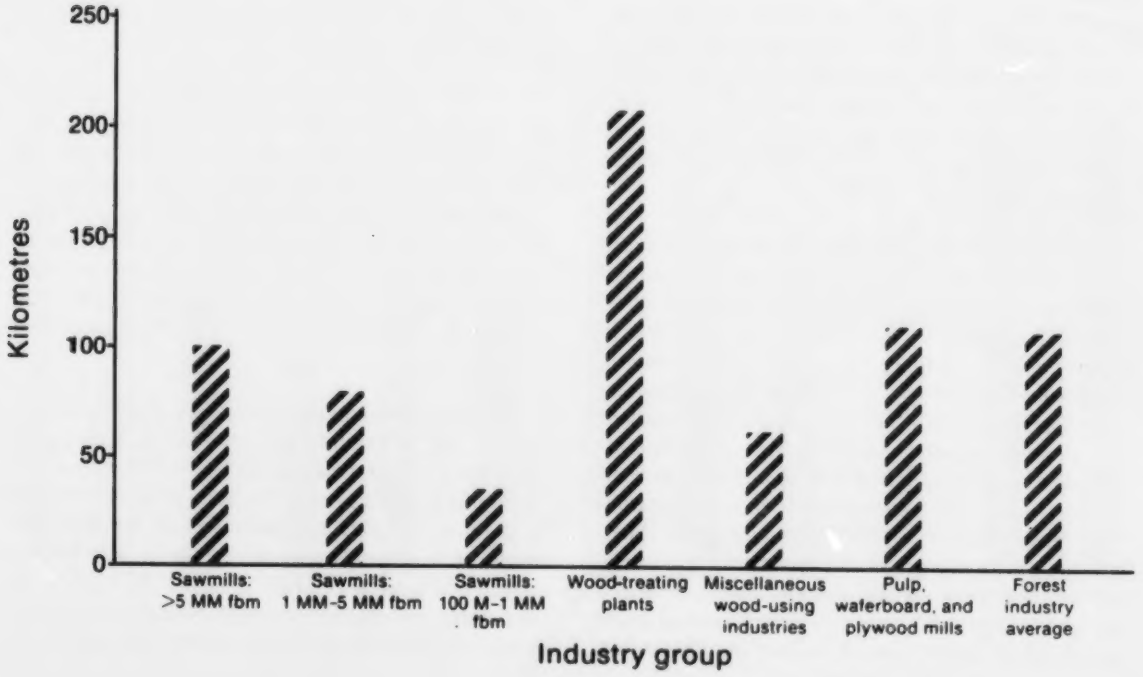

Figure 26. Average roundwood haul distance by industry group, 1985.

CHAPTER IV

SASKATCHEWAN'S FOREST INDUSTRY WITHIN THE CANADIAN CONTEXT

In the past, Canada's forest industry has relied on a plentiful supply of quality wood fiber, inexpensive energy, and a trained and experienced work force to maintain a cost-competitive edge in the manufacturing as well as marketing of forest products (Koken 1986). Several recent developments, however, have the potential to threaten Canada's position as a world forestry leader. Foremost among these developments is that the high productivity of the land base and lower labor costs in developing countries have led to forecasts that nontraditional producers will account for increasingly larger shares of world forest products trade in the near future (Boulter 1986). Technological advances in the utilization of hardwoods for pulp manufacturing and the probability of subsidized pulp and paper for export is expected to change these regions from traditional importers of forest products to competitive exporters (Mullinder 1987).

A number of other factors may affect Canada's competitive advantage. Increased concern for environmental impacts may result in more restrictions, higher costs, and greater regulations of production methods (Mullinder 1987). Secondly, the supply of readily available old growth softwood timber is approaching its limits in Canada. And lastly, overall demand for forest products may continue to be adversely affected by nonfiber-based substitute products made of plastics and metals.

As a result of these developments, Canadian producers will be subjected to heightened competitive pressures on traditional product lines. There are alternatives, however. Recently introduced technologies in the areas of pulping, bleaching, paper-making, composite wood products, and solid wood products offer opportunities for the Canadian industry to adapt and possibly expand. Opportunities in secondary manufacturing (such as wood office furniture, kitchen cabinets, and health care products) are also forecasted to increase (Ackerman 1987). Mullinder (1987) stated that the prime ingredient in products for the future will be knowledge content rather than material and that productivity will be measured in terms of value added rather than tonnes of production. This transition caused by technological innovation and greater diversification into secondary manufacturing will lead to further expansion of the industry.

Today Canada is the leading forest products exporting nation in the world. Each of our 10 provinces contributes to the nation's positive balance of trade, and, in a sense, the provinces compete with each other for global markets. Thus, an assessment of the competitive ability of Saskatchewan producers with respect to other provinces provides a basis of comparison for evaluating the status of the Saskatchewan forest industry[6]. Useful measures for comparative purposes are labor productivity, capital productivity, and average variable costs.

Labor and Capital Productivity

Increases in productivity are measured by improvements in technology, improvements in utilization, improvements in managerial skills and organizational techniques, and changes in the skill and efforts of the labor force. Two interrelated components of productivity are labor productivity and capital productivity.

One measure of labor productivity is value added for goods of own manufacture (expressed in current dollars) per person-hour paid. In 1984, the last year for which statistics are available, Saskatchewan's logging industry (SIC 04) ranked ninth in labor productivity (Fig. 27); however, the woods industry as a whole was approximately equal to that of the Canadian average (Fig. 28). Due to confidentiality constraints no data are available for the paper and allied industry.

Capital productivity is measured in terms of output per unit of capital input. Due to a lack of capital input data, the best measure is by VAMP—value added minus payrolls per worker hour. Maki et al. (1985) explained that this approach adjusts for wide differences in payrolls among regions or sectors and thus serves as a relative measure to capital investments and entrepreneurship. Saskatchewan's logging industry ranked ninth in capital productivity in

[6] This approach is useful for general comparisons only.

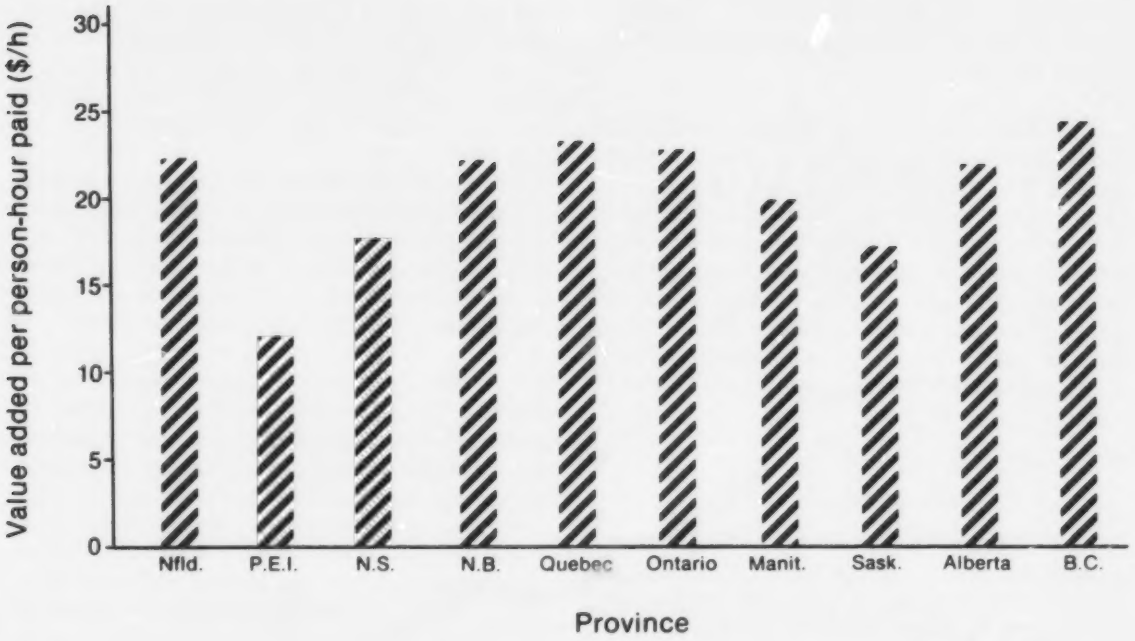

Figure 27. Labor productivity in the logging industry, 1984. (Source: Statistics Canada 1986d.)

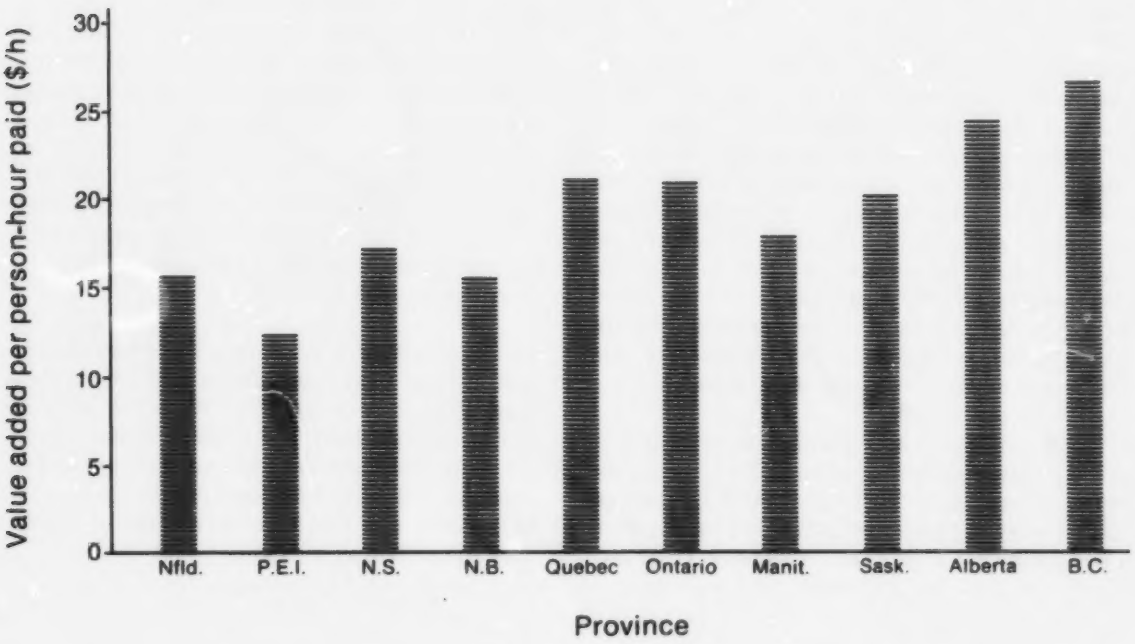

Figure 28. Labor productivity in the wood industries, 1984. (Source: Statistics Canada 1986c.)

1984 (Fig. 29). The wood industries ranked ninth as well (Fig. 30). These comparisons of labor and capital productivity levels indicate that Saskatchewan is performing at average to below-average levels compared to other provinces.

The data in Figures 27-30 lead to a number of possible inferences regarding Saskatchewan's forestry situation. First, the physical productivity (physical output per unit of input) of Saskatchewan is lower than average because the logging output is primarily pulpwood and small-diameter sawlogs, which are low-value products. Second, older harvesting technologies and smaller size or scale of operations are used. And third, the value of the product mix of Saskatchewan mills could be lower than the value of wood industry products elsewhere.

Costs of Production

Costs of production are another important determinant of competitive ability. Although competitive ability is difficult to measure directly, it is possible to determine the relative efficiency of forest products manufacture among provinces. One such measure is average variable cost; that is, total variable cost divided by output.

Statistics Canada reports variable cost information in three categories (wages and salaries, fuel and electricity, and materials and supplies) for each province by two-digit SIC code. Ideally, comparisons are made using cost-per-unit output (e.g., dollars per cubic metre of roundwood, dollars per thousand board feet of lumber, or dollars per tonne of pulp). A lack of detailed output data and a lack of homogeneity among forest products, however, necessitated the use of value of shipments of own manufacture as an index of output. As a result, competitive ability is measured in terms of total variable cost per dollar of output. Although this measure ignores fixed costs of production, for which no data are available, the values are indicative of competitive position.

The competitive ability of the forestry sector is in large part dependent upon an efficient logging industry. Numerous studies (F.L.C. Reed and Associates 1973; Teskey and Smyth 1975; Sandwell Management Consultants 1977; Department of Industry, Trade and Commerce 1978; Ontario Ministry of Natural Resources 1981; Ondro and Williamson 1985) have identified wood as the largest single cost component necessary in the manufacture of forest products. As a result, the efficiency of the logging industry has a direct impact upon downstream activities such as the manufacture of sawn and pulped products.

Saskatchewan's logging industry has the highest manufacturing costs in Canada; manufacturing costs accounted for 90 cents per dollar of shipments in 1984 (Fig. 31). The high costs of fuel and electricity, as well as materials and supplies, were responsible for reducing the competitive ability of this industry.

Manufacturing costs in Saskatchewan's wood industries accounted for 88 cents per dollar of shipments of own manufacture and were the highest among all provinces (Fig. 32). Each cost component (wages and salaries, fuel and electricity, and materials and supplies) was substantially greater than the national average. These high costs have a direct negative impact upon the current and future competitive position of Saskatchewan's wood industries.

Competitive Ability

This chapter has indicated that Saskatchewan producers, in comparison to those in other provinces, have low labor and capital productivity and high average variable costs. Also affecting competitive ability is the fact that land-locked Saskatchewan has the disadvantage of being far removed from major market demand centers such as southern Ontario and the eastern and western U.S. seaboards and thus faces high market transportation costs. Nonetheless, most production areas of Saskatchewan do enjoy a competitive advantage because they have an economically available wood surplus.

These facts, in total, suggest that Saskatchewan producers are more vulnerable to short-term cyclical price shifts and longer-term structural shifts in markets and products. The future challenge will be to incorporate newer production methods, changing products, and market demands in order to develop an industry mix that takes advantage of Saskatchewan's resources situation.

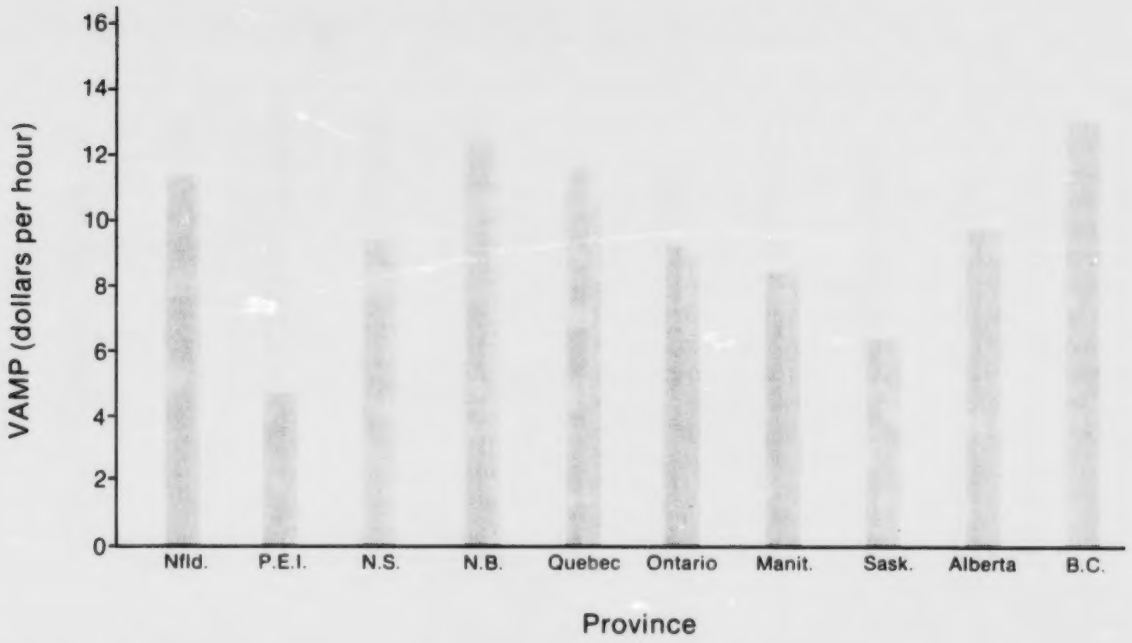

Figure 29. Capital productivity in the logging industry, 1984. (Source: Statistics Canada 1986d.)

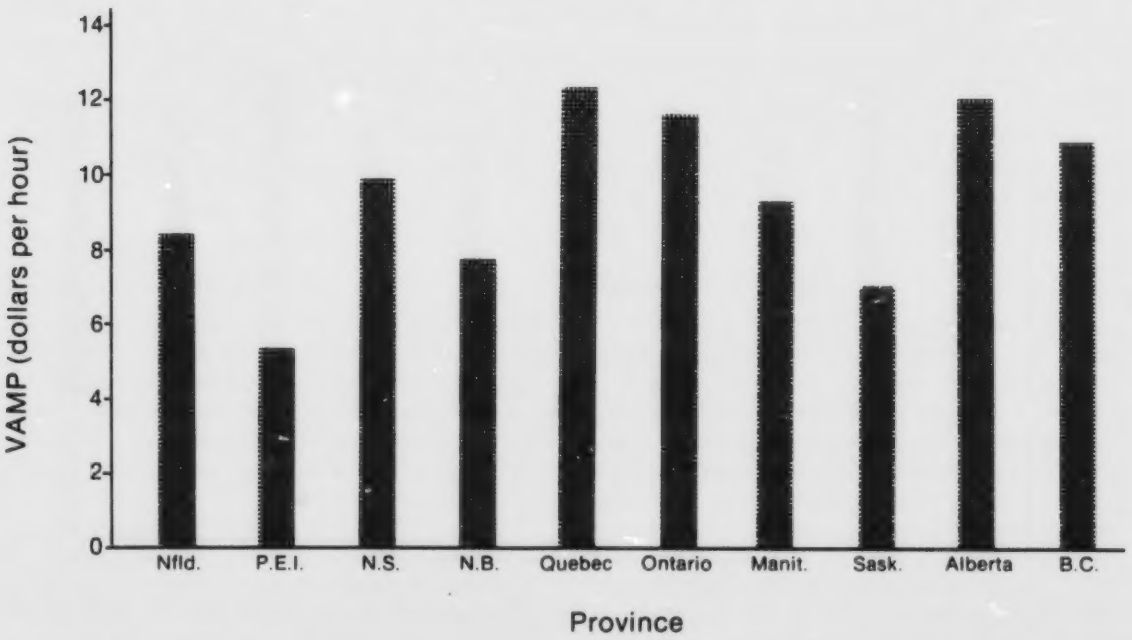

Figure 30. Capital productivity in the wood industries, 1984. (Source: Statistics Canada 1986c.)

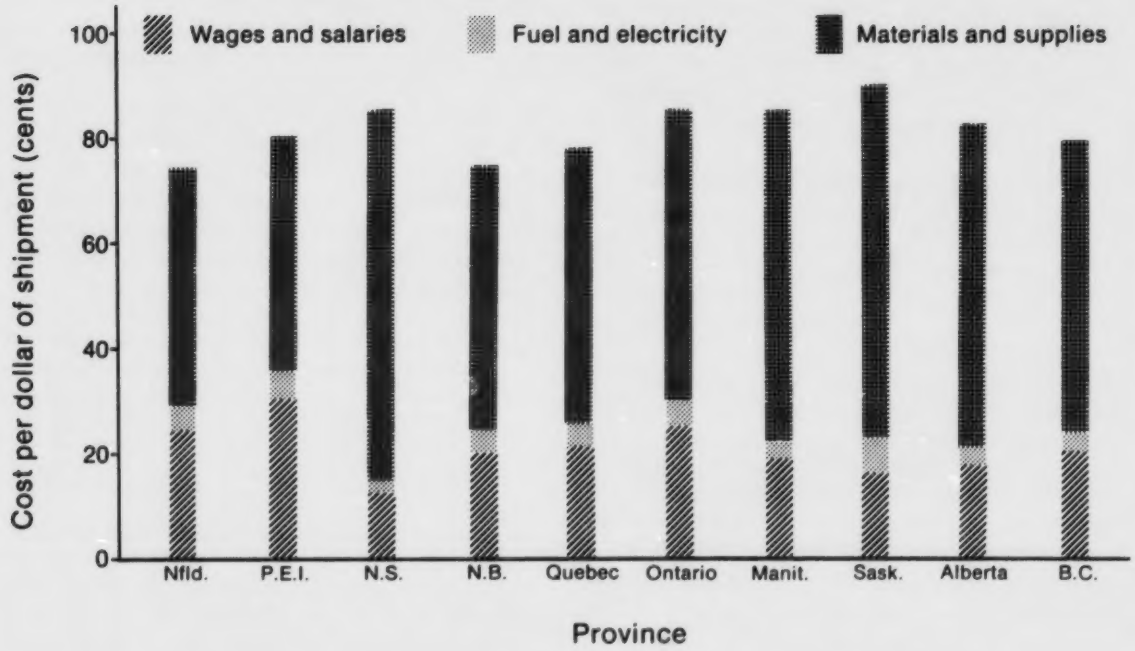

Figure 31. Manufacturing costs in the logging industry, 1984. (Source: Statistics Canada 1986d.)

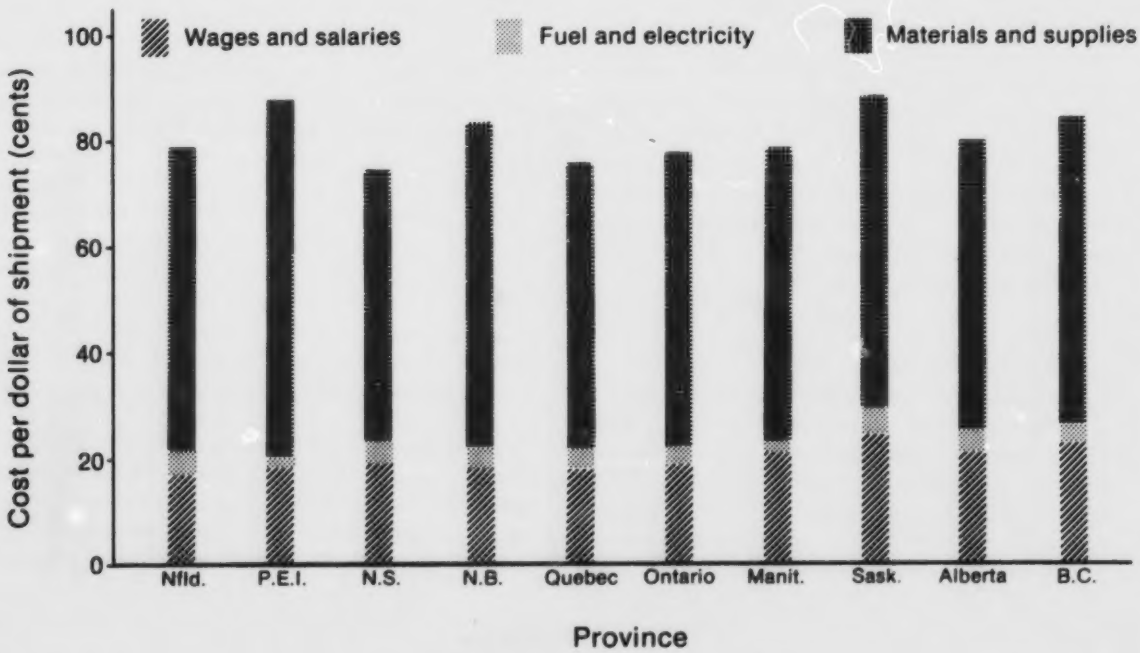

Figure 32. Manufacturing costs in the wood industries, 1984. (Source: Statistics Canada 1986c.)

CHAPTER V

TECHNOLOGY IN THE FOREST INDUSTRY

General Technology Assessment

The technical challenge facing Canada's forest industries is to extract more product value from the resource. In order to do this, cost of production must be reduced by investment in appropriate cost-efficient machinery and processing techniques that will in turn reduce inputs and their costs as well as maximize cost-efficient throughput to achieve a consistent, desirable, cost-comparable product.

Considerable research and development efforts are being directed toward cost reduction, new product development, and ensuring the future health and productivity of our forests. High-technology machinery and equipment, originally developed by the military-aerospace and medical sectors, are now becoming commercially available and viable for the forest industry. For example, laser technology, computer-assisted designing and manufacturing, robotics, and process control offer potential improvements in product recovery, product out-turn or throughput, and quality.

Experts from Forintek Canada Corp., Canada's national wood products research institute, were consulted to assess the status of technology employed by Saskatchewan's forest industry. Their evaluation, summarized by industry group, appears below. A more detailed description of the equipment used by Saskatchewan's forest industry can be found in Giles (1986).

Sawmills

Greater than 5 MM fbm

The six sawmills in this industry group produced between 5.5 MM and 105.0 MM fbm of sawn products for a total production of 220.1 MM fbm in 1985. Table 9 illustrates the distribution of equipment for each of the six mills compared to the equipment used when the industry was last surveyed in 1980.

The equipment currently being used appears to be appropriate for the log diameter range encountered and the volumes produced. For primary log breakdown, 82% of the total production is produced by three mills using modern Chip-n-saws or chipping canters. Resaws are used in four of the mills to improve recovery; as well, edging is done in all but one of the mills, again to increase recovery.

The four largest mills have dry kilns and plane their lumber, though only one of the smaller mills in this category planes its lumber. The planers used in this industry group are at least 15 years old; however, they are rugged and well-suited to the production levels of each of the mills. The two smaller mills are running between 48 and 63% of capacity, indicating that equipment is not a limiting factor. The larger mills are operating between 84 and 100% capacity, which suggests that the equipment is coming close to being a limiting factor.

1 MM to 5 MM fbm

The four sawmills in this group saw 1985 production range from 1.05 MM to 2.15 MM fbm, for a total output equal to 6.70 MM fbm. The three largest mills were stationary mills, with the one remaining sawmill being portable. Each mill consists of a 132-cm and/or a 122-cm circular headsaw, which is appropriate for the lumber sizes produced (Table 10). Saw kerfs were either 9.5 mm (3/8 in.) or 7.9 mm (5/16 in.). If care is taken with log positioning and the feed speed is moderate, modest lumber recovery is possible. Each mill has an edger for side board recovery. The largest mill has a resaw to improve recovery, and two mills use trim saws to produce standardized lumber lengths. Two mills use planers to produce finished lumber. This type of mill configuration has a capacity of 5-15 times actual production; consequently, equipment is not a limiting factor.

100 M to 1 MM fbm

There are 32 mills in this group, with 1985 production ranging from 100 M to 999 M fbm, for a total of 9.6 MM fbm. Table 11 shows the distribution of lumber processing equipment for each of the stationary and portable sawmills. All of the mills use circular headrig carriages with a range in saw diameter of 90 cm to 132 cm. Seventy-eight percent of the stationary mills have edgers to enhance recovery compared to only 61% of the portable mills, and 56% of the stationary mills have trim saws compared to 9% of the portable mills. Of the stationary mills, 44% have planers as compared to 26% of the portable mills. This type of equipment is well-suited to the log

Table 9. Distribution of lumber processing equipment in sawmills[a] producing greater than 5 MM fbm per year, 1980 and 1985

Equipment	Mills (1980)						Mills (1985)					
	A	B	C	D	E	F	A	B	C	D	E	F
Debarker	0	1	2	1	1	4	0	1	3	2	1	4
Cutoff saw	0	1	1	1	1	0	0	1	1	1	1	0
Circular head saw	1	1	0	0	0	0	1	1	0	0	0	0
Scragg, band, quad, or gang saw	0	1	1	1	1	0	0	1	1	1	1	0
Chip-n-saw, chipping canter	0	0	1	1	1	3	0	0	0	1	1	3
Reman or resaw	1	1	1	0	1	0	1	1	1	0	1	0
Edger and trimmer	2	2	1	1	1	2	2	2	2	1	1	1
Chipper	0	1	0	1	1	0	0	1	0	0	0	0
Chipping edger	0	0	0	0	0	0	0	0	0	1	1	0
Planer	0	2	1	1	1	2	0	1	1	1	1	2
Dry kiln	0	0	2	1	1	5	0	0	2	1	1	5

[a] Mills A through F in 1980 correspond to mills A through F in 1985.

Table 10. Distribution of lumber processing equipment in sawmills producing 1 MM to 5 MM fbm per year, 1985

Equipment	Mill			
	A	B	C	D
Debarker	0	0	0	0
Cutoff saw	0	0	0	0
Circular head saw	1	1	1	1
Scragg, band, quad, or gang saw	0	0	0	0
Chip-n-saw, chipping canter	0	0	0	0
Reman or resaw	0	1	0	0
Edger and trimmer	2	1	2	1
Chipper	0	0	0	0
Chipping edger	0	0	0	0
Planer	0	1	1	0
Dry kiln	0	0	0	0

diameters and volumes produced and is not a limiting factor in production.

Less than 100 M fbm

In 1985, there were 116 sawmills in this size class. Based on provincial forestry records, total production was estimated to be 3.8 MM fbm, with average production per mill equal to 33 M fbm. Although specific information on the technology employed by these mills is unavailable, it is known that over 73% of these small sawmills produced less than 50 M fbm each. This would suggest that the equipment used by these mills might not be very efficient; however, an appropriate level of technology is employed given the probable objectives of the owners, which are to generate supplemental income and to manufacture lumber for personal use.

Table 11. Distribution of lumber processing equipment in sawmills producing 100 m to 1 MM fbm per year, 1985.

Equipment	Stationary sawmills	Portable sawmills
Number of mills	9	23
Mills with circle carriages (102-132 cm)	9	23
Mills with edgers	7	14
Mills with trim saws	5	2
Mills with planers	4	6

Independent Planing Mills

The two independent planing mills in Saskatchewan produced a total of 8 MM fbm in 1985. The planers used in both mills are not new, but they serve the purpose of upgrading the surface finish of the lumber. One of the mills is equipped with a trim saw and has a portable sawmill complete with edger and three-saw trimmer. Equipment is not a limiting factor to expansion for either mill.

Wood-treating Plants

The 12 wood-treating plants ranged in production from 166 to 35 000 m^3; total production for 1985 was 78 500 m^3. Of the 12 plants, 10 produced more than 1000 m^3 per year. The distribution of equipment and wood preservatives used in these 10 plants is shown in Table 12.

Table 12. Wood preservation equipment and preservatives used in wood-treating plants producing more than 1000 m^3 per year, 1985

Equipment and preservative type	Mill									
	A	B	C	D	E	F	G	H	I	J
Equipment (number of units)										
Post peeler	2	2	2	2	2	1	2	1	1	1
Pole peeler	0	0	0	0	1	0	1	0	0	0
Sharpener	2	2	2	2	0	2	2	1	1	1
Open treatment tank	0	1	1	0	0	0	0	0	2	1
Pressure treatment tank	1	0	0	1	2	1	1	1	0	0
Domer	0	2	2	2	0	0	0	1	1	1
Preservative used[a]										
Copper-chromate-arsenate	Y	N	N	N	Y	N	N	Y	N	N
Pentachlorophenol-diesel	N	Y	Y	Y	Y	Y	Y	N	Y	Y

[a] Y = Yes, N = No.

All plants have post peelers and all but one have post sharpeners. Six plants have domers for top rounding. Six of the plants use pressure treatment tanks, and the remaining four use open treatment tanks. Seven plants use a pentachlorophenol and fuel oil mix, three plants use a copper-chromate-arsenate water mix, and one plant uses both treatments. The technology used by this industry group is suitable for the volumes of preservative-treated material handled by these facilities.

Miscellaneous Wood-using Industries

This industry group is composed of two log home plants and one lath mill. The log home plants use either a log mill or a log lathe in the manufacture of their product. Production in 1985 was a modest 500 m^3 per plant. The lath mill is a family operation with limited production over the last 5 years.

Pulp, Waferboard, and Plywood Mills

Weyerhaeuser Canada Ltd. is the largest forestry operation in the province. The pulp mill produced 264 000 tonnes of bleached kraft pulp in 1985. A kraft pulping plant, chemical recovery plant, bleach plant, stock preparation plant, production and finishing plant, and steam plant are all part of the pulp mill complex. Standard technology is used with the addition of process control to ensure product quality and uniformity.

The first waferboard plant, built in 1959 and located in Hudson Bay, is owned by MacMillan Bloedel Ltd. This plant is now one of four large industrial consumers of aspen in the prairie region. In 1985 the plant produced 1050 million sq. ft. (1/16-in. basis) of waferboard, which is sold as Aspenite. The equipment consists of debarkers, waferizers, driers, presses, a trim saw assembly, and a sander.

The province's plywood plant, also located in Hudson Bay, was built in 1973 and is owned by the Saskatchewan Forest Products Corporation. The plant uses the higher-value peeler blocks produced by the sawmills in the area. Plywood production was 80.6 MM sq. ft. in 1985. The equipment consists of a debarker, veneer lathe, clipper, stacker, driers, glue spreader, prepress, hot press, and panel trim and grading systems. The machinery is standard technology developed many years ago and perfected to carry out the task of manufacturing plywood efficiently.

Limits to Growth and Change

Two factors limiting growth and change in Saskatchewan's forest industry are resource availability and economy of scale. The decreasing availability of economically accessible wood fiber, particularly to small sawmill operators and the treated wood industry, has an impact upon the future of the forest industry.

Excessive transportation distances of raw material to the mills and finished products to market currently limit the opportunity for capital expansion. Although a wood surplus exists in some areas, this surplus is generally located in the far northern portion of the province, far removed from the end user, including local construction and farming markets on which some small operators currently rely.

The second inhibitor to technological growth is economy of scale. This is especially true for Saskatchewan's sawmill industry, as only four mills have annual production that exceeds 25 MM fbm per year. Profit margins are so strained that smaller annual production will not support major capital investments. Additionally, the lack of competition for sawmilling by-products makes chip production and transportation uneconomical for all but the largest sawmill operations.

CHAPTER VI

PRODUCTION AND MARKETS FOR SASKATCHEWAN'S FOREST PRODUCTS

Saskatchewan's forest industry manufactures and sells a wide variety of products. Detailed 1985 production and marketing statistics by industry group follow.

Sawmills and Independent Planing Mills

Both of these two industries produce three distinct types of products: dimension lumber, board lumber, and timbers. Thickness differentiates each of these products, with timber, dimension lumber, and board lumber having thicknesses of 7.5 cm or greater, 5.0-7.5 cm, and 2.5-5.0 cm, respectively (Ondro and Williamson 1985).

In 1985, Saskatchewan's sawmill and planing mill industry produced over 243 million board feet of sawn products, over 95% of which was dressed (Fig. 33). This statistic excludes mills with production less than 100 M fbm per year as they make only a minor contribution to the total provincial production. The large sawmill category (with annual production of 5 MM fbm or greater) produced over 90% of all sawn products and accounted for 92.4% of the dimension lumber output, 79.5% of the board lumber output, and 62.9% of the timber output.

The distribution of products within lumber types shows that the standard 2 × 4 was the predominant product, accounting for 61.3% of all dimension lumber output (Fig. 34). Among board products, 1 × 4s were most commonly produced, accounting for 53.6% of the total board output (Fig. 35). Of timbers, 71.9% of the output was 6 × 6 in size (Fig. 36).

Fifty-one percent of all Saskatchewan lumber products were shipped by rail (Fig. 37). Among sawmills and planing mills, however, differences in transportation methods existed (Fig. 38). Small- and medium-sized sawmills and independent planing mills relied almost exclusively on truck transport, with trucking accounting for 72-100% of the lumber shipped. Sawmills in the 5 MM fbm and over size category used both rail and truck transport in almost equal amounts, shipping 56% of their lumber volume by train and 44% by truck. Ondro and Williamson (1985) identified two factors to explain the difference in transportation method. First, the large sawmills produced sufficient quantities of lumber to fill rail cars on a regular basis. Second, output from the large mills was generally shipped to distant markets, and rail transport provided a less-expensive mode of transportation.

Only the largest sawmills and plywood mill produced wood chips in sufficient quantities to warrant their sale. The majority of chips, over 85%, were shipped by truck to the pulp mill in Prince Albert (Fig. 39).

Wood-treating Plants

Saskatchewan's wood-treating plants produced over 78 000 m^3 of preserved products in 1985. Products manufactured within this industry group included treated posts (70% of volume), treated lumber (25%), and treated poles (5%) (Fig. 40). Only a small portion of this total output, approximately 3%, was custom production.

Miscellaneous Wood-using Industries

Saskatchewan's three miscellaneous wood-using industries comprise a minor component of the provincial forest industry. In 1985, these firms manufactured approximately 1000 m^3 of house logs and 45 M fbm of lath material.

Pulp, Waferboard, and Plywood Mills

The pulp, waferboard, and plywood mills comprise the major element of Saskatchewan's forest industry. This industry group consumes more wood fiber, employs more people, and generates more sales than any other component of the provincial forestry sector. Products manufactured include 231 000 t of bleached softwood kraft pulp, 33 000 t of bleached hardwood kraft pulp, 81 million sq. ft. of plywood (3/8-in. basis), and 1050 million sq. ft. of waferboard (1/16-in. basis).

Product Flows and Market Destinations

In 1985, Saskatchewan sold over $305 million worth of forest products. Product destinations ranged from local markets to eastern Canada, the United States, Europe, and the Pacific Rim nations (Fig. 41).

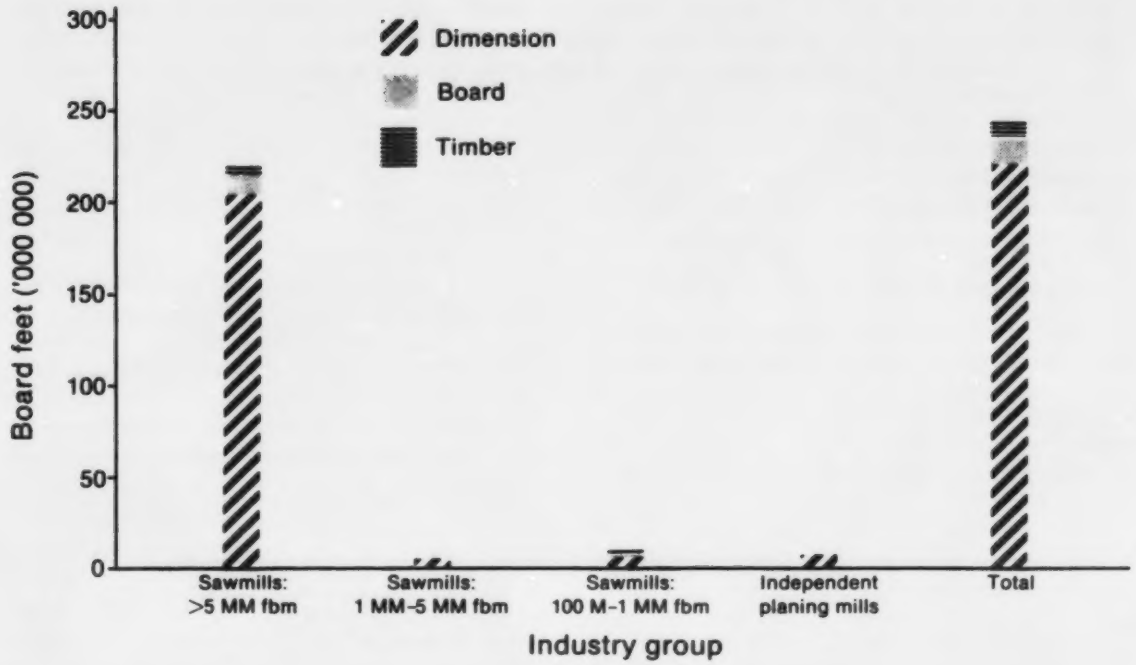

Figure 33. Saskatchewan's lumber production by product and industry group, 1985.

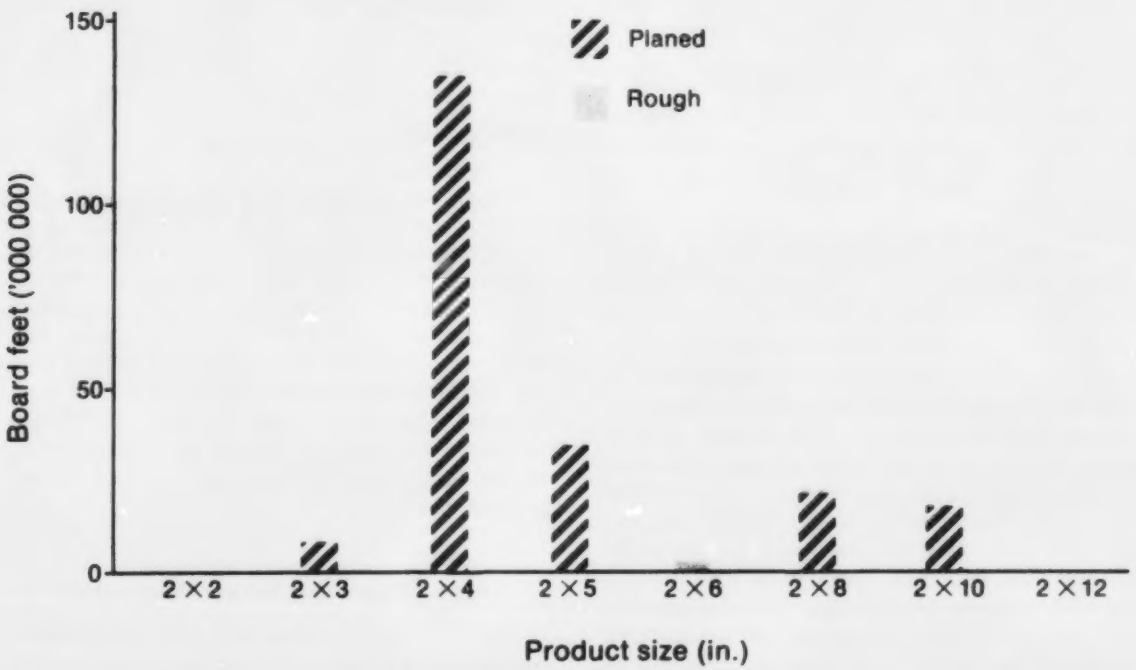

Figure 34. Saskatchewan's dimension lumber output, 1985.

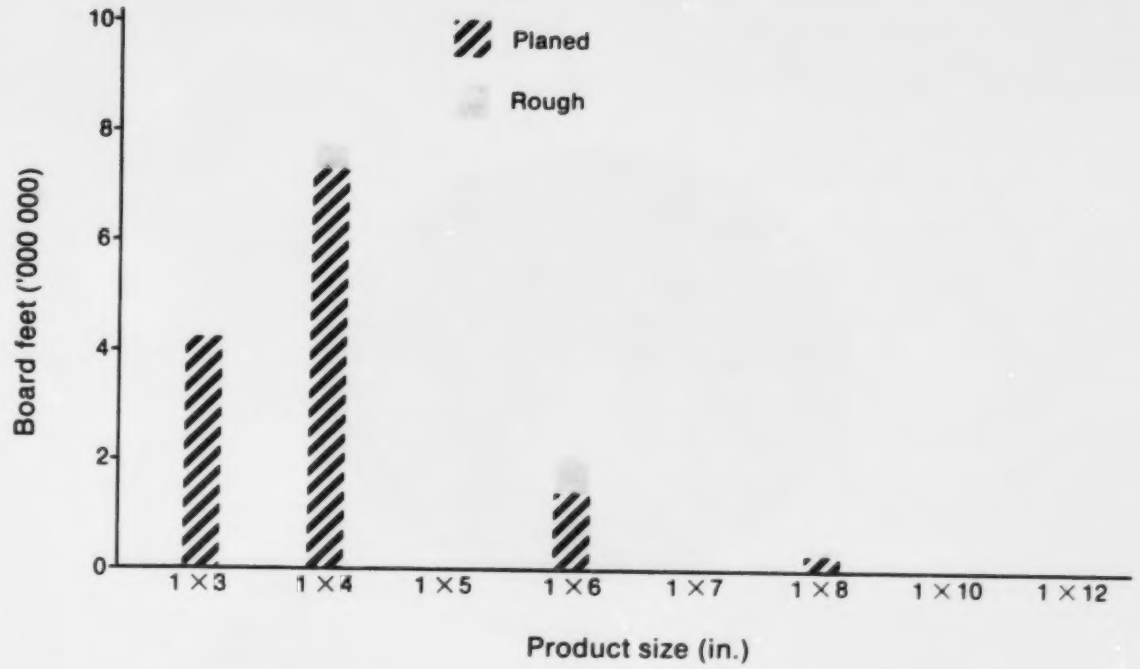

Figure 35. Saskatchewan's board lumber output, 1985.

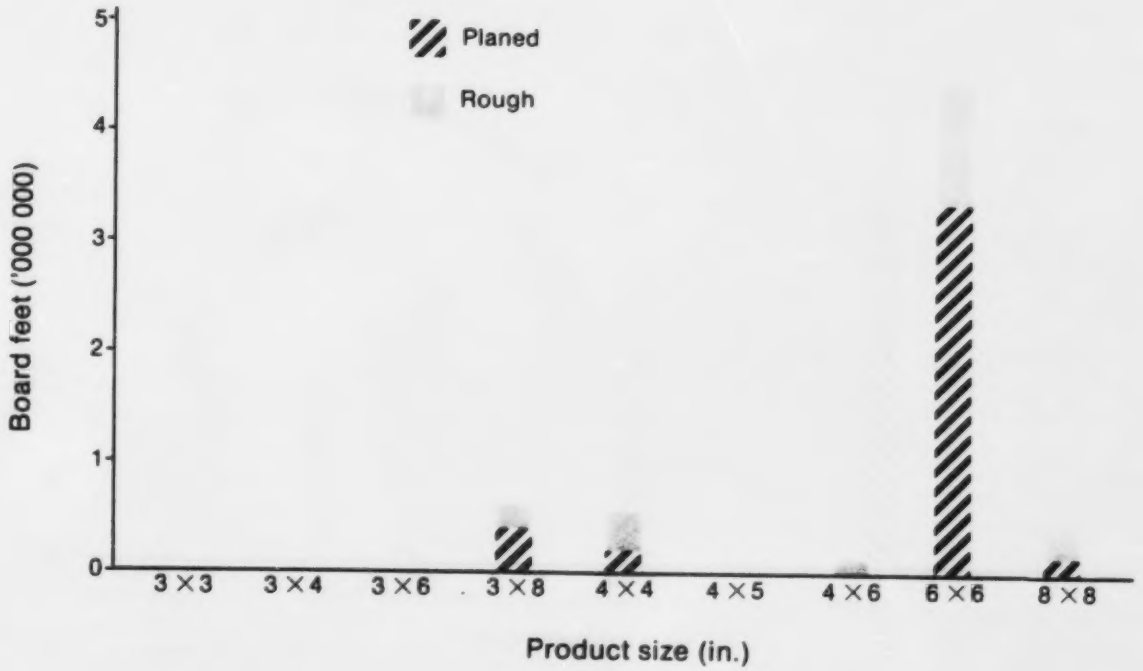

Figure 36. Saskatchewan's timber lumber output, 1985.

By far the most important market for Saskatchewan's forest products was the midwestern United States, which received 30% or over $92 million of Saskatchewan forestry exports in 1985. Of the total value of shipments, only $42 million (14%) remained in Saskatchewan. Market destination varied with the type of product and the scale of the manufacturing operation. A detailed discussion of product flows by industry groups follows.

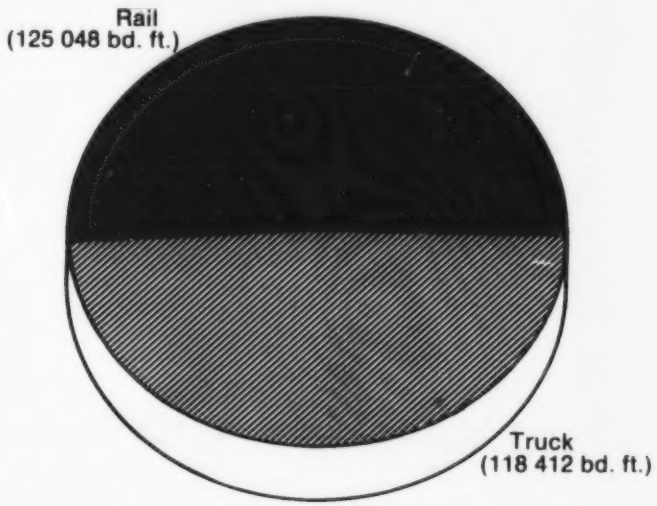

Figure 37. Transportation of lumber products, 1985.

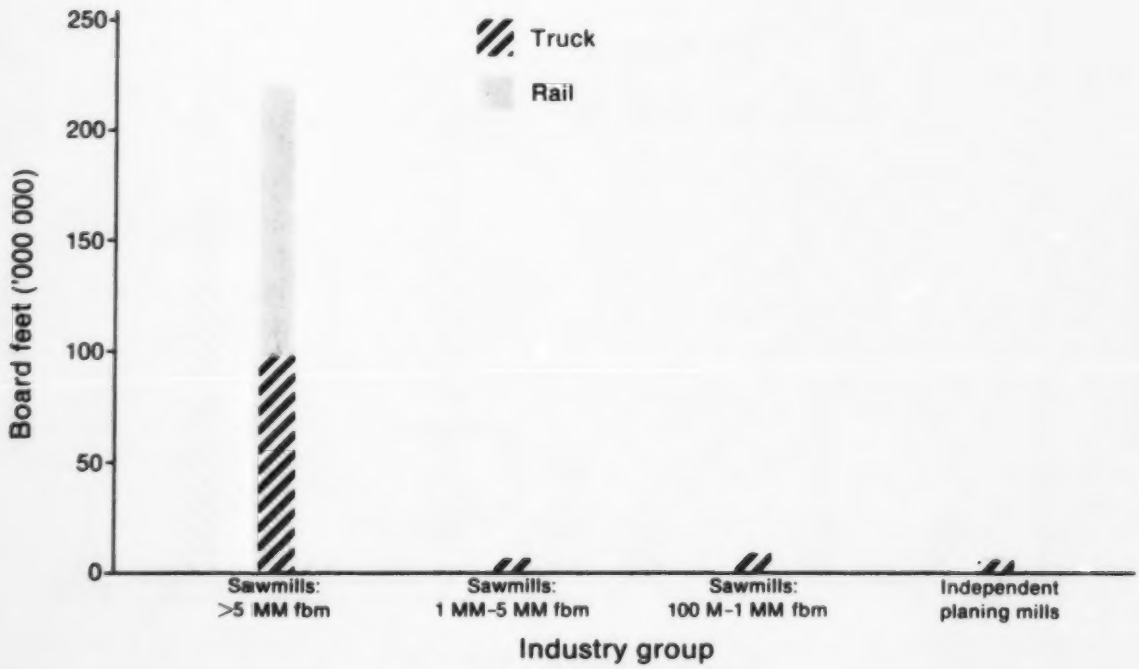

Figure 38. Transportation of lumber products by industry group, 1985.

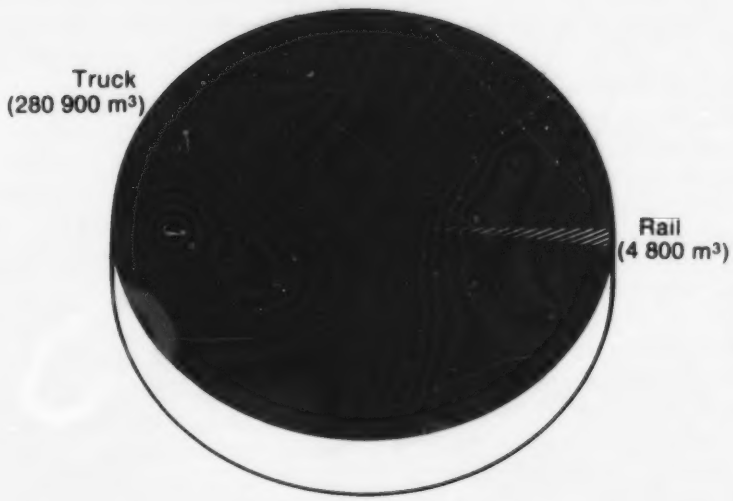

Figure 39. Transportation of wood chips, 1985.

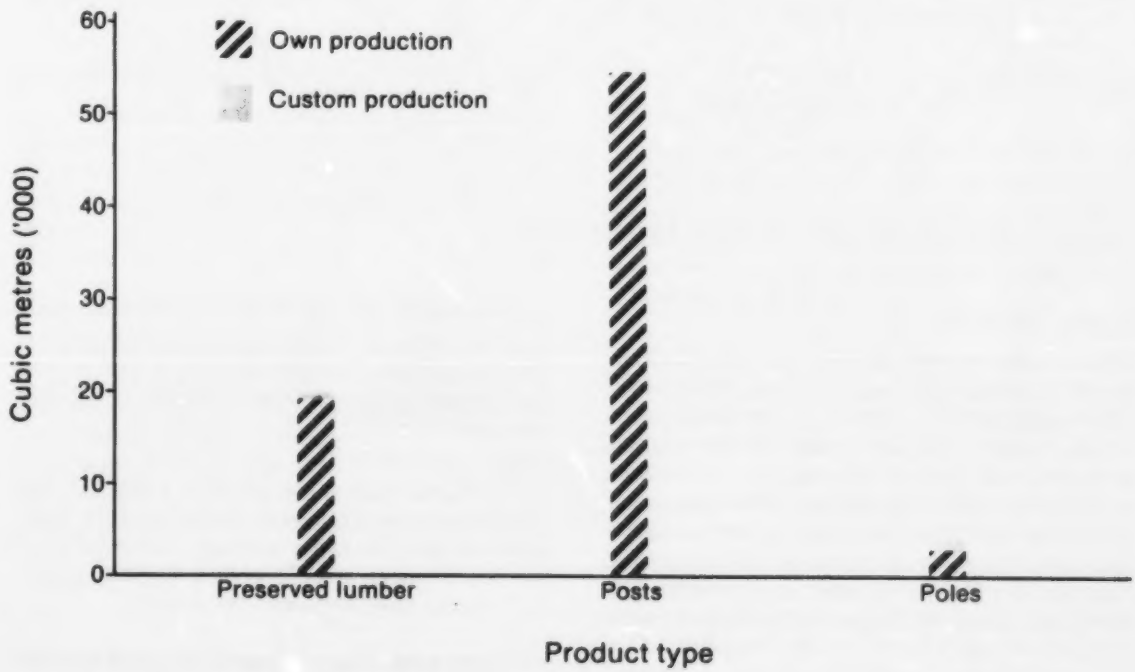

Figure 40. Production of Saskatchewan's wood-treating plants, 1985.

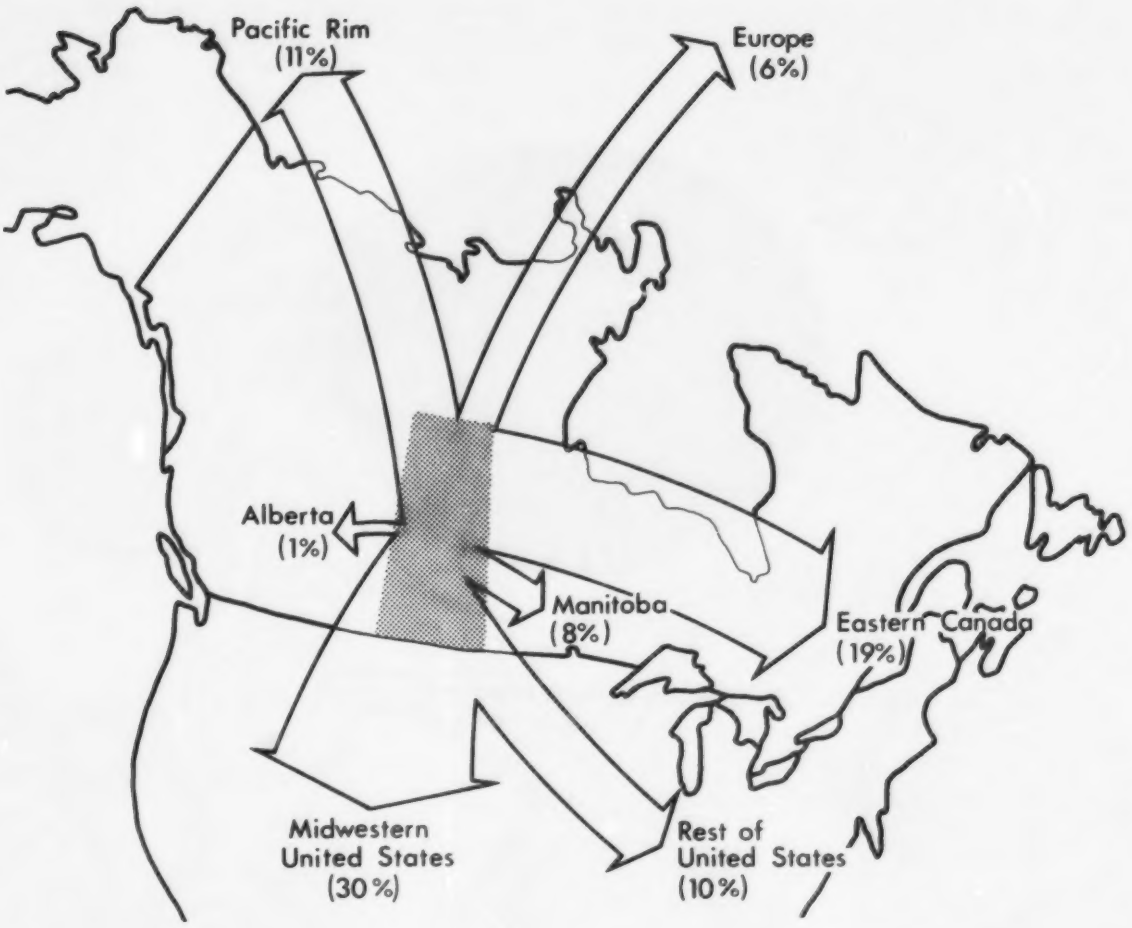

Figure 41. Markets for Saskatchewan's forest products.

Lumber Markets

Sawmills in the 5 MM fbm and over category shipped 88% of their dimension products, 82% of their board products, and 84% of their timbers to out-of-province markets in 1985 (Table 13). The most important market area of this group was the midwest United States, which received over 59% of the dimension lumber and 76% of the board lumber that Saskatchewan produced. Producing large volumes of sawn materials on a continuous basis has allowed the mills in this size category to remain competitive in export markets.

Medium-size sawmills producing 1 MM to 5 MM fbm were more dependent on provincial and regional markets for the sale of their forest products. In 1985, these mills exported 62% of their dimension lumber, 11% of their board lumber, and 58% of their timber. The primary markets for these mills were other Canadian provinces.

Small sawmills in the 100 M to 1 MM fbm size category produced primarily for local and provincial markets. Only 5% of the dimension lumber, 10% of the board lumber, and 27% of the timbers were shipped outside Saskatchewan's boundaries.

Table 13 illustrates a definite correlation between volumes manufactured and markets. Generally, the small- and medium-sized sawmills lack the volumes

as well as marketing infrastructure necessary to penetrate export markets. Consequently, as mill production decreases, dependency on local markets increases. Output of the smaller sawmills is important in satisfying local demand for housing and light-construction materials (Ondro and Williamson 1985). In this manner, small sawmills avoid direct competition with larger mills by operating within a different market niche.

Independent planing mills rely on export markets for the sale of dimension and board lumber (Table 13). The majority of timbers, however, are generally sold within the province.

Markets for Treated Wood Products

The treated wood industry marketed its products throughout Saskatchewan, western and eastern Canada, and the United States (Fig. 42). Market destination varied with the type of product. The majority of treated posts, used primarily for fencing, were sold within western Canada; however, a small amount, less than 6%, was shipped to the United States. Preserved poles were marketed equally between provincial and export markets. Eastern Canada was the main market for treated lumber and timber, receiving 72% of all shipments. The remainder was shipped within the province.

Miscellaneous Wood Products Markets

The majority of miscellaneous wood products, house logs and lath, were sold within the province. A small portion of the house logs were shipped outside of Saskatchewan to the neighboring province of Alberta.

Pulp, Waferboard, and Plywood Markets

Saskatchewan's pulp, waferboard, and plywood mills produced almost exclusively for export markets. One hundred percent of the kraft pulp, 90% of the waferboard, and 84% of the plywood were shipped outside the province (Figs. 43-45). The most important markets for this industry group were eastern Canada and the United States. As a group, these mills were the most important source of new money in Saskatchewan's forest economy.

Market Outlook: Constraints and Opportunities

The future of the forest industry is dependent upon its ability to meet the challenge of increased competition, new product development, and world markets (Veltkamp 1987).

In the area of competition, disinflation and slow economic growth since 1980 has brought about an excess of capacity over demand and heightened competitive pressures. Today, survival means cutting costs and raising productivity (Veltkamp 1987).

As for new products, the forest industry has not been noted for product innovation, especially when compared to the computer or financial industries. New products and processes are being developed, however, and are changing the competitive landscape. The emphasis is now on manufacturing added value products that satisfy smaller, developing segments of a global market (Veltkamp 1987).

Concerning world markets, Veltkamp (1987) noted that in recent years the concept of a world market has become a reality for many forest products. The emergence of nontraditional producers of forest products has sharpened the focus on competition and new products in an international setting.

The market outlooks that follow were prepared and presented by Resource Information Systems Inc. (RISI)[7] at its annual conference held during September 23-26, 1986, in Boston, Massachusetts.

World Market Pulp

Pulp is an intermediate product in the production of paper. The majority of world pulp production is manufactured into paper and related products by integrated pulp and paper complexes. Pulp that enters the market place without being processed into paper is termed market pulp.

In recent years, there has been strong growth in the demand for market pulp in response to an upswing in U.S. and European paper markets, substitution of imported pulp for domestic supplies in Japan, continued strong growth in Asia, and inventory building by papermakers. Coinciding with the increase in demand were supply restrictions caused by voluntary Scandinavian mill downtime in early 1986, the withdrawal of American integrated pulp and paper producers, and the British Columbia sawmill strike (B.C. pulp mills use wood chips obtained from sawmills as their primary source of wood fiber.) The net result has been that profitability has responded strongly to the tighter market conditions.

[7] RISI is a consulting firm that provides detailed economic statistics on the international forest products industry. This information includes historical data, written analyses, and quantitative forecasts.

Table 13. Saskatchewan's lumber markets (M fbm), 1985

Market destination	Sawmills greater than 5 MM fbm			Sawmills 1 MM to 5 MM fbm			Sawmills 100 M to 1 MM fbm			Independent planing mills			
	Dimension	Board	Timber	Dimension	Board	Timber	Dimension	Board	Timber	Dimension	Board	Timber	Total
Local	5 100	600	300	45	13	0	2991	736	180	150	30	20	10 165
Provincial	19 149	1485	436	1755	732	215	2955	381	1024	1515	240	400	30 287
Other western provinces	35 974	1196	270	625	45	300	296	99	451	2595	330	40	42 221
Eastern Canada	23 168	0	3524	1415	10	0	28	2	0	0	0	0	28 147
Midwest USA	120 669	8275	0	960	35	0	0	21	0	2340	300	40	132 640

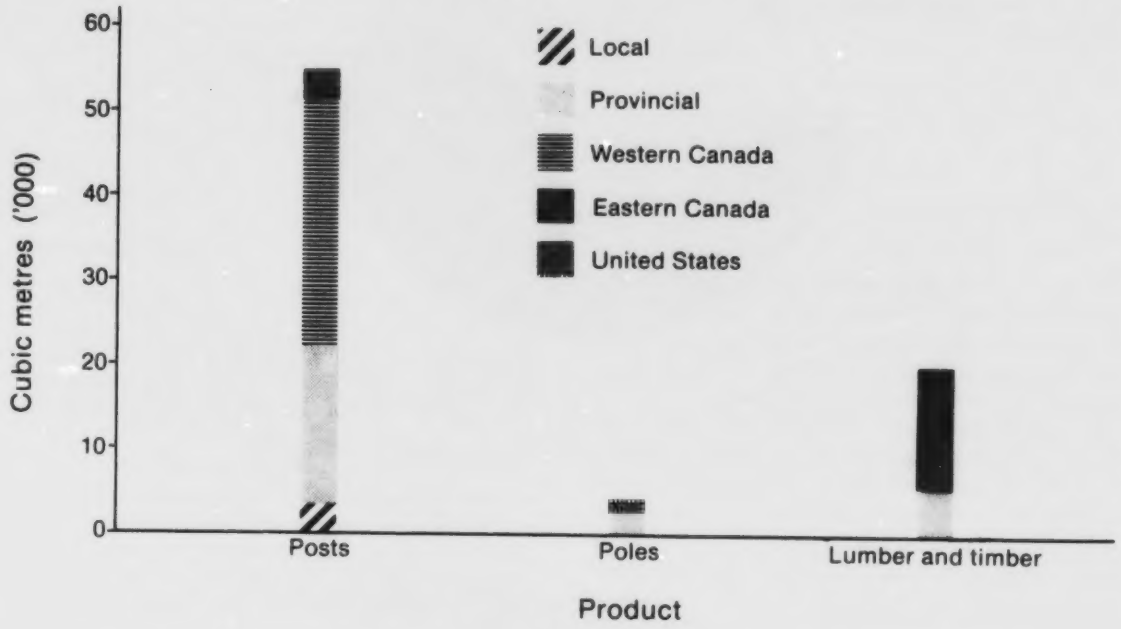

Figure 42. Markets for treated wood products, 1985.

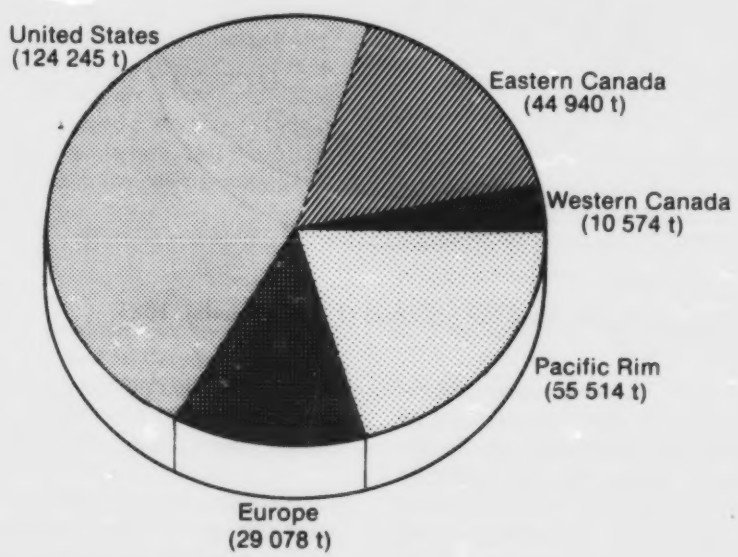

Figure 43. Markets for bleached kraft pulp, 1985.

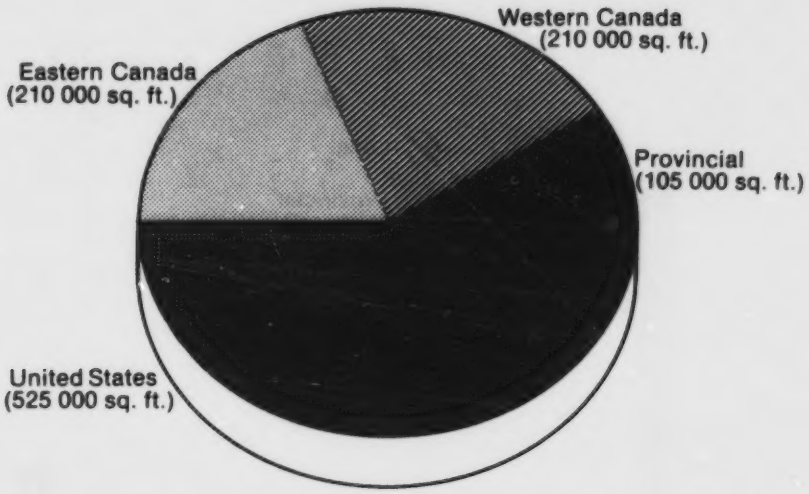

Figure 44. Markets for waferboard (1/16-in. basis), 1985.

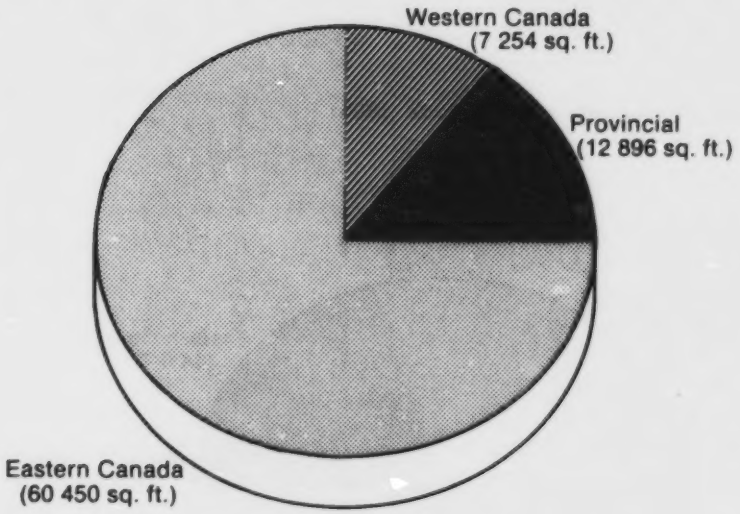

Figure 45. Markets for plywood (1/16-in. basis), 1985.

It is forecast that world market pulp demand should continue to show good growth through 1987-89, hitting a level of 30 million tonnes before the next recession-induced drop, predicted for 1990-91. This growth will be fueled by solid general economic expansion; specifically, printing and writing paper demand rising faster than general economies on a worldwide basis, tissue paper demand rising faster than general economies outside of North America, strong fluff pulp demand growth outside of Europe and North America, continuing substitution of imported pulp in Japan, and a strong Asian market.

Generally, pulp producers are not prepared to meet this sustained demand growth as capacity expansion plans have been minimal for the second half of this decade. Thus, incremental expansion at existing mills and robust chemithermomechanical pulp (CTMP)

capacity growth will keep market pulp operating rates at an average of 95% from 1987 to 1989. Consequently, a good profitability environment is projected over the next 3 years. In response to increased profitability, large increases in capacity will be forthcoming in the first half of the 1990s. This capacity will be concentrated in nontraditional regions, pushing North American and Scandinavian producers into a market share of under 50% by the end of this century.

Softwood Lumber

Average annual U.S. softwood lumber demand has grown from approximately 31 billion board feet in the 1950s to more than 41 billion board feet in the 1980s. Average annual U.S. lumber demand is forecast to grow to 46 billion board feet in the 1990s.

Significant structural changes have occurred in lumber markets. Since 1950, the residential construction (i.e., new homes) share of U.S. lumber consumption has been steadily declining. This trend should continue to the year 2000. As a result, housing starts will continue to become less important as an indicator of lumber demand. Future growth in lumber demand will be driven by repairs and alterations, which will more than offset a decline in new home lumber consumption.

Significant trends are also apparent on the supply side. In the 1950s, domestic producers accounted for 91% of U.S. domestic consumption. By the mid-1980s, domestic producers' share dropped to 69% of U.S. demand. Most of the increased import share has come from Canadian producers who are low-cost producers because of low wood costs, location advantages, or modern mill infrastructure. This trend caused U.S. producers to launch the countervailing duty action against Canada.

Structural Panels

Structural panel products include veneered (plywood) and nonveneered (waferboard, oriented strand board) panels. At the aggregate level, total U.S. structural panel demand has grown by 3.2 billion sq. ft. (3/8-in. basis) during 1978-85. Total U.S. demand is forecast to grow an additional 3.2 billion sq. ft. during 1985-88. Although growth in demand has been observed and is expected to continue, the structure of the market is changing. These developments are similar to the trends experienced by the lumber industry. As with lumber, the proportion of total U.S. panel demand in residential construction has declined. This trend should continue to the year 2000. By the end of the century, the share of total U.S. demand in residential construction will have dropped to about 30%. Increases in the use of structural panels for repairs and alterations have and will continue to offset declining residential construction use. By the year 2000, repairs and alterations should increase to 35% of total U.S. demand.

Total structural panel demand is expected to grow to a level of 29 billion sq. ft. by the year 2000. The type of panels satisfying this demand, however, will be drastically different from the product distribution of the early 1970s. In the early 1970s, structural panel demand was comprised almost entirely of veneered panel, with 75% in rough grades and 25% in sanded grades. In the latter part of the decade, waferboard and oriented strand board (OSB) began to capture small portions (3%) of the structural panel market. In the first part of the 1980s, the nonveneered panels' share of total demand increased dramatically to 9%. By the turn of the century, RISI projects that the nonveneered share of total structural panel demand will increase to 51%. Most of this growth will occur at the expense of the rough grades of veneer material, which will decline due to reductions in housing starts and direct substitution of nonveneered panel grades. The primary factors contributing to the expected dramatic substitution of nonveneered panels for veneered panels is the increasing scarcity of panel-quality roundwood and the cost differentials in wood input costs between the veneered and nonveneered products.

Added Value Products

Saskatchewan's forest industry is based upon the manufacture of commodity-like products for export, primarily to the United States. Although demand for market pulp, softwood lumber, and structural panels is forecast to grow, Saskatchewan's poor competitive position may result in a diminished share of growth in these expanding markets.

Products generating added value are capable of supporting the high manufacturing costs that characterize Saskatchewan's forest industry. Typically, production that entails technological progress grows faster than general production averages in periods of rising incomes (Boulter 1986). Industries producing added value products are generally able to secure market share growth during periods of economic expansion through experience and scale

of production (Boulter 1986). Consequently, added value products present a real opportunity for Saskatchewan's forest industry to utilize its comparative advantage of an economically available wood surplus.

Technological innovation has created several products that add value to the traditional raw material of wood. These include the following five groups:

1) glued products such as finger-jointed lumber (studs, boards, and planks), laminated veneer lumber, edge-glued boards, trapezoidal lumber, edge-glued and ripped products, laminated beams, reconstituted wood products (e.g., Parallam or Scrimber), composite wood and metal, wood and paper, and wood and plastic products, and ready-to-assemble furniture components;

2) structural products such as laminated veneer lumber flanges with plywood or oriented strand board (OSB) web, I-beams using 2 × 4s as flanges with plywood or OSB web, and engineered beams and trusses using machine stress-rated lumber;

3) treated wood products (such as long-life preserved wood foundations) and fire retarding of wood via chemical treatment;

4) hardwood products such as oriented strand board; medium density fiberboard, saw-dry-rip lumber for furniture parts, System-6 furniture parts, and precision cut, automatically assembled windows and doors; and

5) pulp and paper products such as chemithermomechanical pulp, supercalendered papers, and light-weight coated papers.

Forest industry development should focus on the manufacture of added value products that embody technological progress and not forest commodities. Efforts to increase the production of standard forest commodities will only lower prices and further impair the profitability of Saskatchewan's mills.

Trade and Tariff Issues

On May 19, 1986, the U.S. Coalition for Fair Lumber Imports[8] filed a Countervail Duty Petition with the United States Department of Commerce. In the petition, the coalition stated that Canada subsidizes its lumber exports by artificially depressing the price paid for standing timber. The coalition alleged that the Canadian stumpage systems confer an unfair advantage upon Canadian producers by undervaluing the Canadian forest resource as compared to U.S. forests. As a result, the U.S. lumber industry requested that the Commerce Department and the U.S. International Trade Commission impose duties of approximately 27% or $54.00 (U.S.) per 1000 board feet on Canadian lumber exported to the U.S. On October 16, 1986, the U.S. Department of Commerce announced that it had arrived at an affirmative preliminary determination of subsidy against Canadian softwood lumber imports. The Department of Commerce determined that the Canadian industry is able to produce softwood lumber at a price far below fair trading value due to government subsidization of stumpage and nonstumpage programs in the four provinces named in the petition (British Columbia, Alberta, Ontario, and Quebec). A countervailing duty of 15% was imposed on all American imports of Canadian softwood lumber.

On December 31, 1986, Canada and the United States reached an agreement in which Canada now levies and collects a 15% export charge on all Canadian softwood lumber entering the U.S., and Canada agreed to drop the GATT challenge to the American countervail action. Under the conditions of the agreement, the U.S. withdrew its countervailing duty case with the Commerce Department because the export charge offsets what American producers claimed to be subsidized stumpage (Pittis 1987). The Canadian and provincial governments have developed a mechanism by which the monies collected from the export charge can be distributed among the provinces without violating the terms of the agreement negotiated with the United States. Some provinces other than Saskatchewan have since been able to negotiate exclusion from export charges.

[8] The Coalition of Fair Lumber Imports is made up of both small and large American companies that manufacture and market lumber.

CHAPTER VII

THE SOCIOECONOMIC IMPACT OF SASKATCHEWAN'S FOREST INDUSTRY

The forest industry has both direct and indirect impacts upon the provincial economy. Direct economic impacts are more obvious and are most often assessed by measuring such factors as industry output, employment, and income. Indirect effects arise when money generated by direct activity is used to purchase goods and services in other areas of the economy; for example, money earned by loggers and sawmill workers is spent locally such as at retail shops, gas stations, and grocery stores. Each of these sectors, in turn, respends the money to purchase additional products. This phenomenon is known as the multiplier effect, and although it is difficult to measure accurately, its influence and importance are far-reaching.

To maintain confidentiality of sensitive information, Statistics Canada does not report principal statistics for Saskatchewan's paper and allied industries. In order to make comparisons among industries, estimates were derived for the paper and allied industry and incorporated into the forest industry totals.

The Place of the Forest Industry in Saskatchewan's Economy

To describe the socioeconomic impact of the forestry sector accurately, the industry must be placed within the context of the overall provincial economy. Saskatchewan's economy is made up of a number of different sectors, most noticeably agriculture and mining. In 1985, Saskatchewan's agriculture sector was proportionately five times larger than the national average, and the mining sector was proportionately twice as large (Fig. 46). On the other hand, Saskatchewan's manufacturing sector, which includes the wood and paper and allied industries, represented only 5% of the provincial economy and over 21% of the Canadian economy.

Employment statistics show a similar pattern. Nineteen percent of Saskatchewan's employment was in the agricultural sector compared with 4% for Canada (Fig. 47). And although the manufacturing sector generated 17% of all employment in Canada, it accounted for only 6% of employment in Saskatchewan.

Value Added

Value added is a monetary measure of an industry's output. It is equal to the value of shipments minus the costs of raw materials, services, and components.

As previously indicated, the manufacturing sector is only a small component of a provincial economy dominated by the agriculture and mining industries. Within the manufacturing sector, however, Saskatchewan's forest industry ranked second in value added (total activity) and represented 16% of the value added contributed by the manufacturing sector[9] (Fig. 48).

Employment, Multipliers, and Induced Effects

Total employment is an important measure of an industry's contribution to the economy. Employment is composed of both direct and indirect components. Direct employment includes jobs directly created by forestry activity, such as loggers, sawmillers, pulp and paper chemists, log scalers, forklift operators, foresters, tree planters, timber cruisers, and many more. As revenue generated by direct activities is spent and respent, indirect employment is created in nonrelated sectors. For example, increases in logging activity give rise to increases in the transportation and retail sectors.

The total employment impact—that is, the sum of direct and indirect components—is derived through the application of employment multipliers. An employment multiplier is a value that when multiplied by direct employment in a given industry estimates the total employment (direct plus indirect) generated by that industry in the region (Ondro and Williamson 1985).

[9] For the purpose of this discussion, logging statistics (SIC 04) have been incorporated into the manufacturing sector. Although logging is not a manufacturing activity per se, it is an integral component of the forest sector. Omission of logging data would lead to an incorrect description of the role of forestry within the provincial economy.

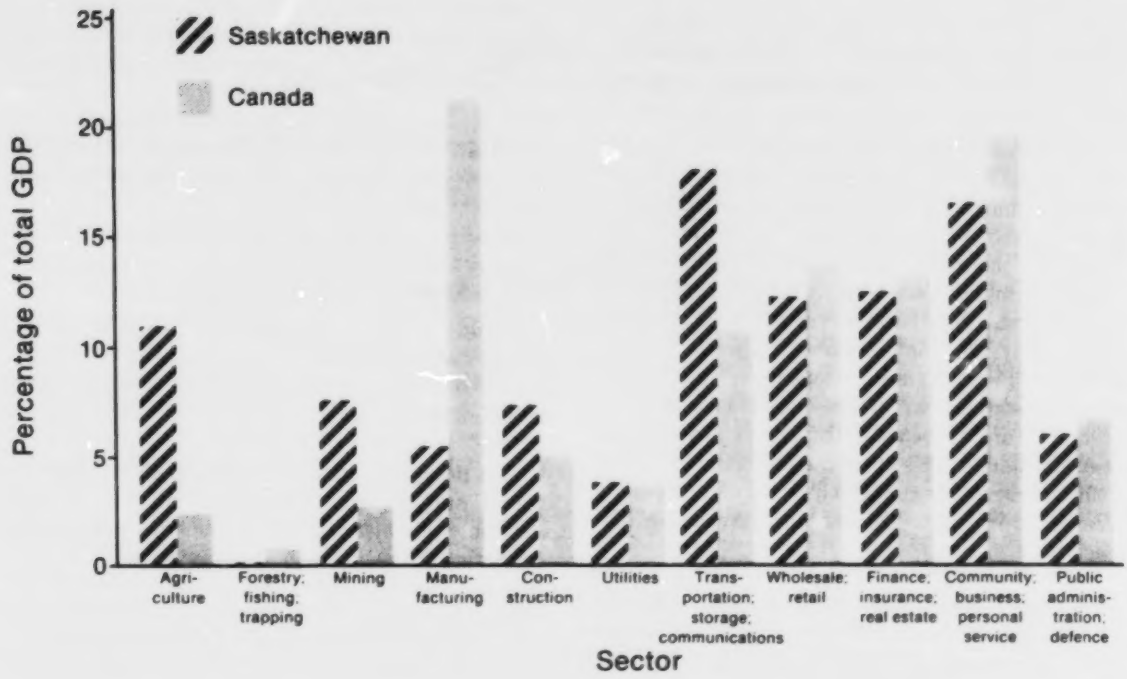

Figure 46. Distribution of gross domestic product (GDP), 1985.

Figure 47. Distribution of employment, 1985.

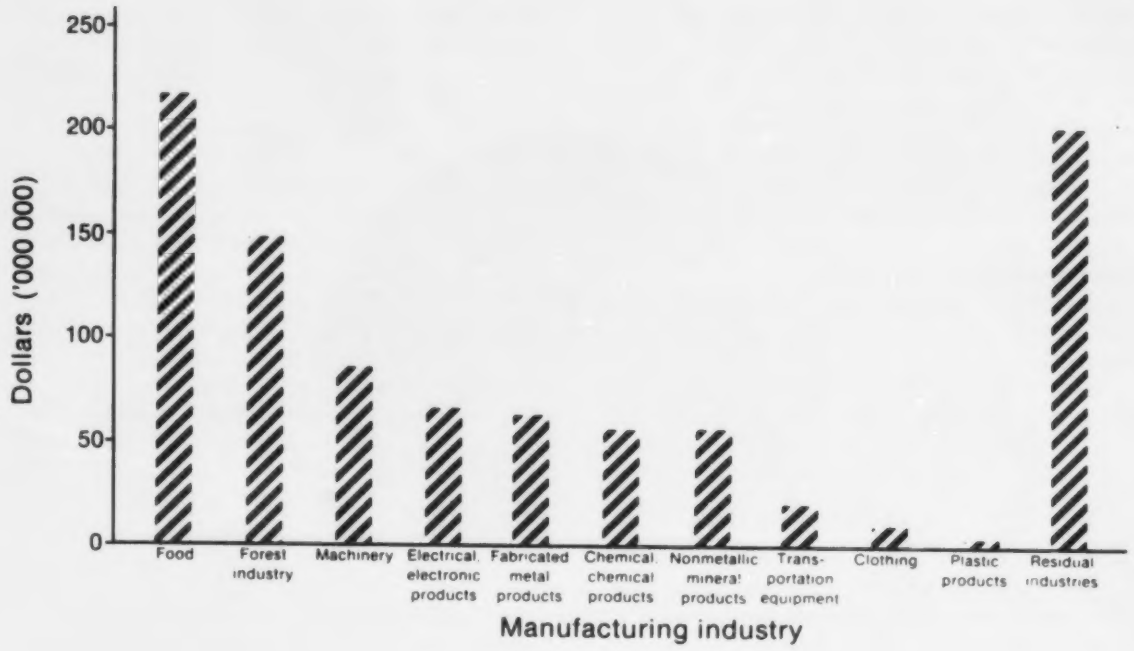

Figure 48. Total value added among Saskatchewan's manufacturing industries, 1984. (Source: Statistics Canada 1986c.)

Direct Employment

Both the number of jobs and the duration of work are critical factors in accurately assessing employment impacts. Forestry work is often seasonal in nature and results in varied lengths of employment. For example, logging may create 90 jobs, but these jobs will only last 4 months. The unit of person-year is a common measure of employment that takes into account both the number of jobs and duration of employment. In the above example, 30 person-years (i.e., [90 × 4]/12) of employment were directly created by logging.

In 1985, direct employment created by Saskatchewan's forest industry totalled over 2700 person-years, representing only 1% of Saskatchewan's employed labor force. As a group, the pulp, waferboard, and plywood mills dominated the industry by generating approximately 42% of all forestry employment (Fig. 49). The sawmilling industry created another 37% of direct forestry employment, largely due to sawmills producing greater than 5 MM fbm annually.

The distribution of own (self) and contract employment is illustrated in Figure 50. Saskatchewan's forest industry uses primarily its own workers for woodlands and processing operations. In 1985, approximately 74% of the direct forestry employment was on company payrolls. Among industry groups, however, differences did exist. Large sawmills and wood-treating plants hired both their own and contract employees in roughly equal proportions. By contrast, independent planing mills and pulp, waferboard, and plywood mills relied almost exclusively on their own employees.

Since the last forest industry survey of 1980, the percentage of contract employees has remained relatively unchanged. Ondro and Williamson (1985) reported that contract employees represented 27% of the industry work force in 1980, compared to 26% in 1985. In the future, companies will move toward the increased use of contract employees in an attempt to lower procurement costs by reducing overhead.

Forestry employment is concentrated in the Prince Albert and Hudson Bay forest regions (Fig. 51).

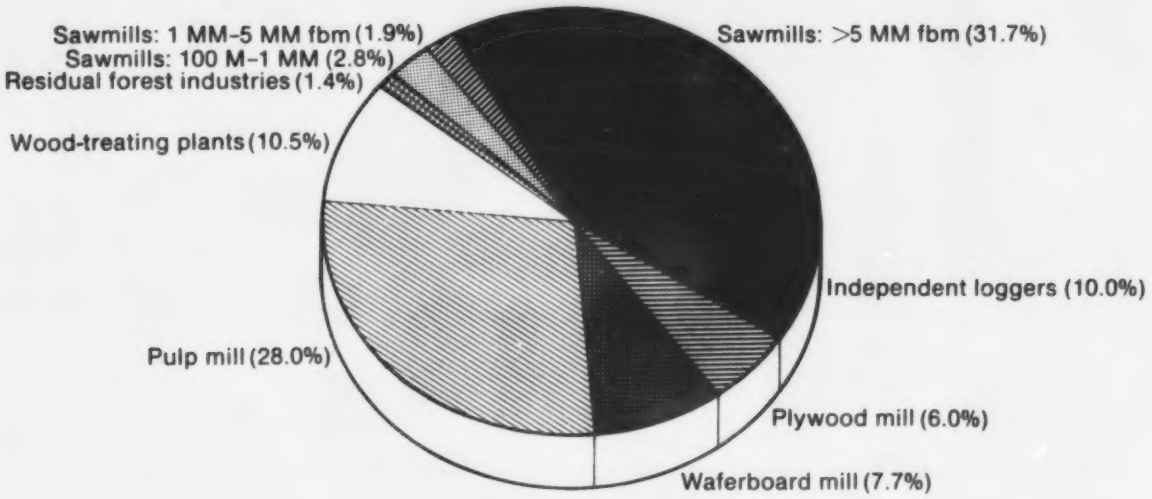

Figure 49. Direct forest industry employment, 1985. Residual forest industries include small sawmills, independent planing mills, and miscellaneous mills.

Figure 50. Distribution of own and contract forestry employment, 1985.

Together, these two regions generated 93% of the total direct forestry employment in Saskatchewan. Due to a limited resource base and a lack of processing plants, the Swift Current, Regina, Melville, and Saskatoon regions support little forestry employment.

In 1985, 9% (or 267 person-years) of all forestry workers were of native ancestry. The sawmill industry generated the majority of native employment opportunities, employing 56% of the natives who were working directly in the forest industry. Most of this work was with sawmills greater than 5 MM fbm annually (Fig. 52). Other important industry groups, in terms of creating direct employment opportunities for the native population, include the pulp, waferboard, and plywood mills and the wood-treating plants. Native participation in the forest industry was concentrated in the Prince Albert region (Fig. 53). This reflects the combination of a large native population and a high level of forestry activity.

As previously indicated, forestry work is seasonal. Harvesting and shipping roundwood are concentrated in the period from late October to late March, when frozen ground conditions facilitate woodland access (Fig. 54). Over the past decade, summer employment in forestry has been on the rise as industry and government implement intensive forest management prescriptions such as site preparation, tree planting, precommercial thinning, and vegetation control. Mill/office and sales employment remains fairly stable throughout the year, ranging from a low of 1386 person-months in December to a high of 1542 person-months in May and June. The manufacture of forestry products is a technological process that, on a large scale, is extremely expensive to shut down and start up. Mill managers are aware of these costs, and consequently, they will go to great lengths to ensure that the mills operate continuously. Hence, mill/office and sales employment shows little variation through the year. Seasonal employment trends for individual forest industries are presented in Appendix 4.

Employment Multipliers

Multipliers are used to derive estimates of total employment impact. The multipliers presented in Table 14 were originally derived from an interprovincial input/output model designed by Statistics Canada for the province of Manitoba. These multipliers were then used to calculate weighted averages by industry group to better reflect the structure of Saskatchewan's forest industry.

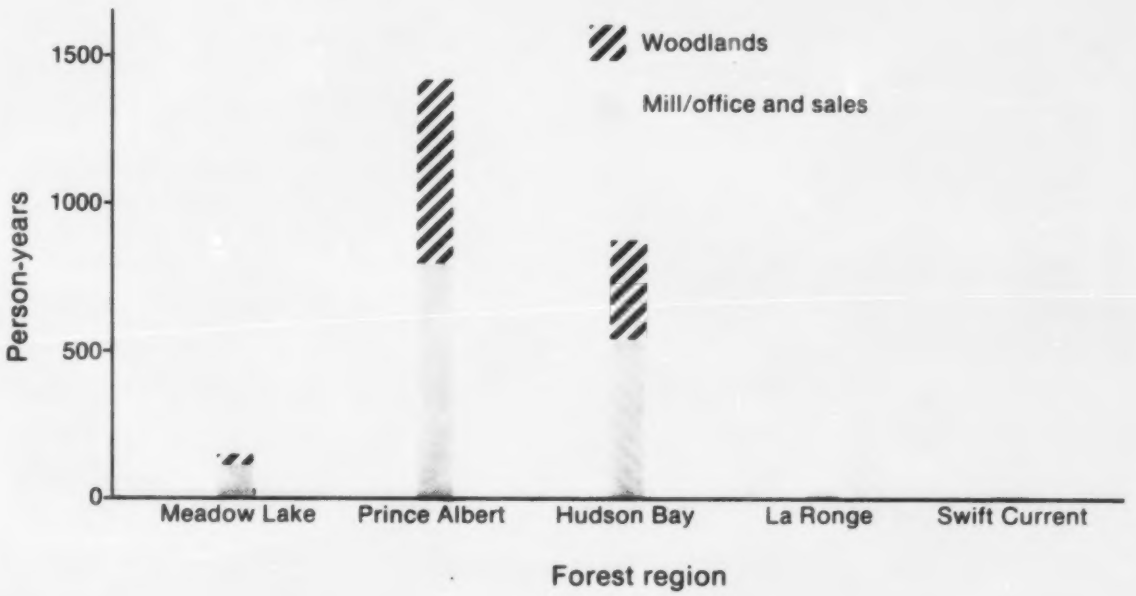

Figure 51. Regional distribution of direct forestry employment, 1985. Employment by small sawmills or independent loggers is not included.

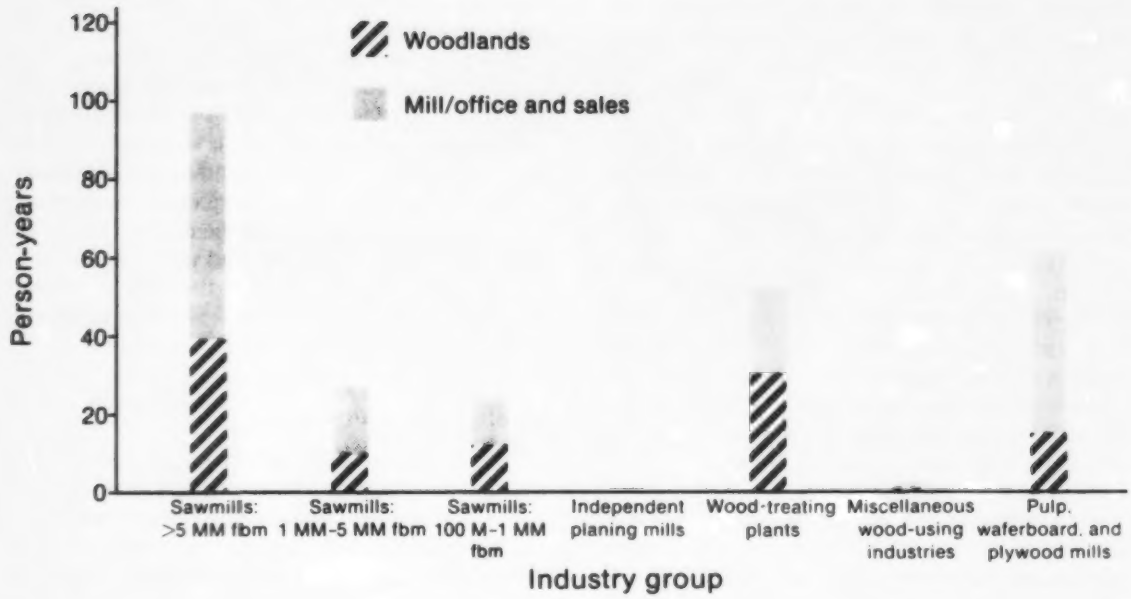

Figure 52. Native direct employment participation by industry group, 1985. Employment by small sawmills or independent loggers is not included.

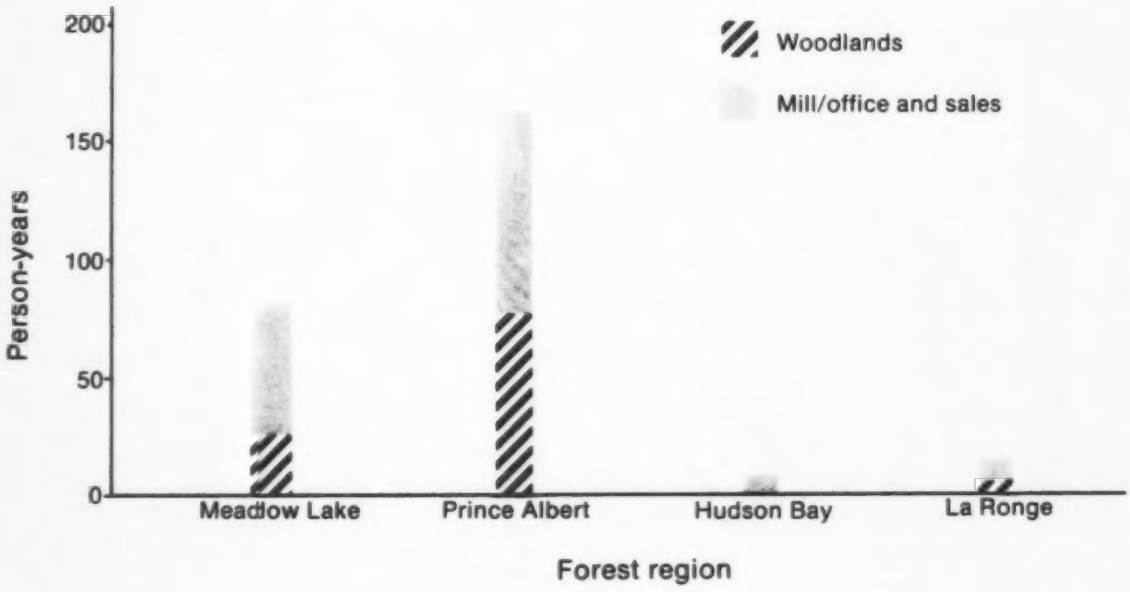

Figure 53. Native direct employment participation by forest region, 1985. Employment by small sawmills or independent loggers is not included.

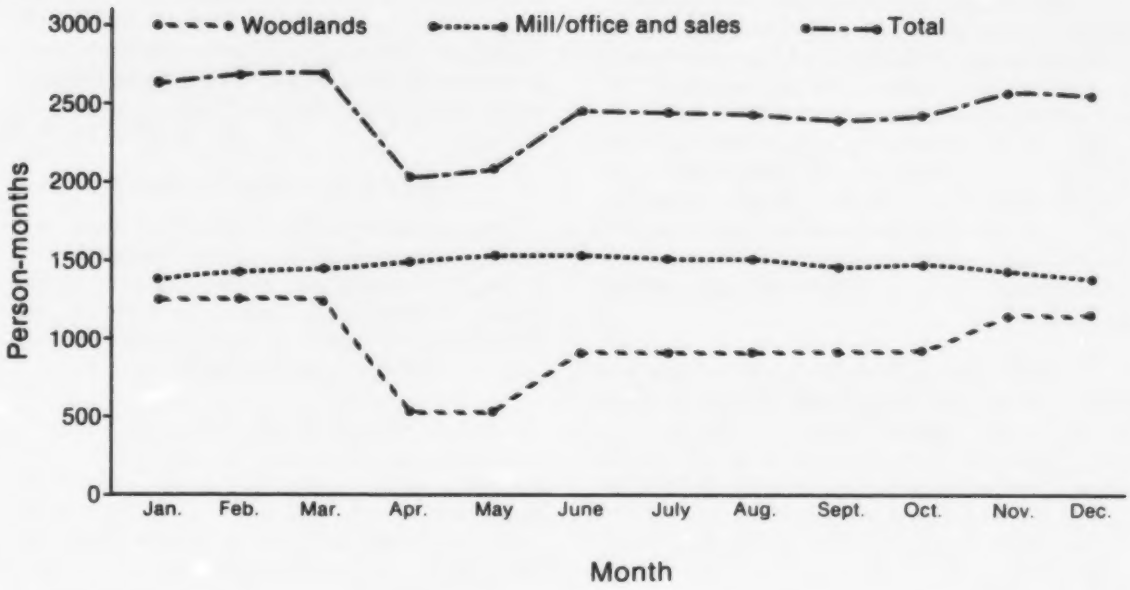

Figure 54. Seasonality of employment, all forest industries. Employment by small sawmills or independent loggers is not included.

Table 14. Total employment impact of Saskatchewan's forest industry, 1985

Industry group	Number of firms	Employment impact (person-years)			Employment multiplier
		Direct	Indirect	Total	
Sawmills					
Greater than 5 MM fbm	6	874	1 576	2 450	2.803
1 MM to 5 MM fbm	4	53	96	149	2.803
100 M to 1 MM fbm	34	78	141	219	2.803
Less than 100 M fbm	116	22	40	62	2.803
Independent planing mills	2	12	22	34	2.803
Wood-treating plants	12	289	264	553	1.912
Miscellaneous wood-using mills	3	5	5	10	1.912
Pulp mill	1	773	1 772	2 545	3.293
Waferboard mill	1	211	192	403	1.912
Plywood mill	1	164	150	314	1.912
Independent log producers	N/A[a]	275	117	392	1.424
Total		2 756	4 375	7 131	

[a] Not available.

Saskatchewan's average employment multiplier for the forest industry is 2.587. This means that for each forestry job, an additional 1.6 jobs were created in the province via indirect employment effects. The pulp industry has the largest multiplier (3.293). Pulp mills are large, complex operations that require an extensive and well-developed infrastructure, and hence it has a larger multiplier. Smaller operations, such as wood-treating plants and independent log producers, do not require the same level of support and consequently have a correspondingly smaller multiplier effect.

In 1985, the impact of the forest industry was 7131 person-years of total employment, of which 2756 were direct and 4375 were indirect. The pulp, waferboard, and plywood industry group had the greatest employment impact, creating 41.7% of all forestry-dependent jobs. The sawmill industry was second, generating another 40% of the total forestry employment.

Wages and Salaries

Labor is compensated for its efforts through the payment of wages and salaries. In 1984, Saskatchewan's forest industry paid out approximately $70 million to its employees; this equalled approximately 14% of the total wages paid by the manufacturing sector (Fig. 55).

More-detailed information on wages and salaries was obtained from a survey of the forest industry. Because different data collection methods were employed, the wages and salaries statistics that follow differ from those presented by other agencies. For the purpose of this discussion, absolute values are not as important as the distribution of wages and salaries among Saskatchewan's forest industry groups and forest regions.

The pulp, waferboard, and plywood industry group contributed 57% of all 1985 gross wages and salaries paid by Saskatchewan's forest industry (Fig. 56). This is not surprising, given that this industry group is the largest forestry employer in the province. Sawmills in the 5 MM fbm and over category had the second-largest payrolls and when taken with the pulp, waferboard, and plywood group accounted for 92% of all gross wages paid by the forestry sector.

The distribution of wages between woodlands (company and contractor) and mill/office and sales varied with the degree of manufacturing involved. As expected, the pulp, waferboard, and plywood group, whose operations are highly complex and dependent upon an intensive technological process, directed the largest portion of their gross salaries and wages (69%) to mill/office and sales personnel.

Forestry is a Growth Industry

For Saskatchewan's economy to grow and develop, it must attract new money through the sale of export products and services. Growth in the economy is achieved by respending within the province the money initially received from outsiders, i.e., implementing the multiplier effect.

Export-oriented industries comprise a region's economic base (Canham 1985; Maki et al. 1985). Generally, most manufacturing activity is considered basic, while service and residentiary activity (e.g., retail shops, gas stations, and grocery stores) are primarily geared to producing for local needs (Maki et al. 1985). In 1985, Saskatchewan's forest industry generated over $263 million through its sale of export goods. This represented 86% of the value of all forest product sales. Thus, forestry is a basic activity and an important source of new money within the province.

Forestry also provides many farm families with the opportunity to supplement their incomes. Several Saskatchewan forestry firms, including Weyerhaeuser Canada Ltd., MacMillan Bloedel Industries Ltd., and Saskatchewan Forest Products Corp., purchase roundwood from private, nonindustrial landowners. As well, small markets exist for locally produced material such as fuelwood and green, rough sawn lumber, boards, and timbers. A number of companies manufacture small-scale mills specifically designed for the small volume or part-time sawyer. These opportunities, together with the seasonal nature of woods work, make forestry a complementary sector to agriculture. Consequently, strategic development of the forest industry could serve as a catalyst for economic growth.

Community Stability and Dependence

Numerous rural Saskatchewan communities are dependent upon the forest resource as their major or only economic base. As was illustrated in Figure 48, over 90% of Saskatchewan's direct forestry employment was concentrated in the Prince Albert and Hudson Bay forest regions. The socioeconomic well-being of many communities within these areas

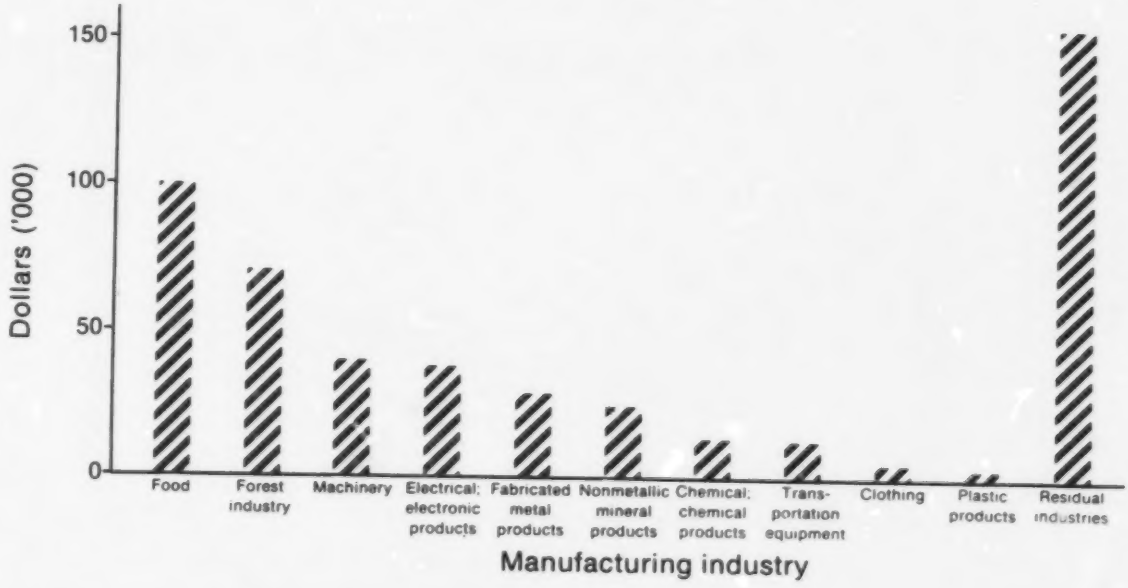

Figure 55. Total wages and salaries among manufacturing industries, 1984.

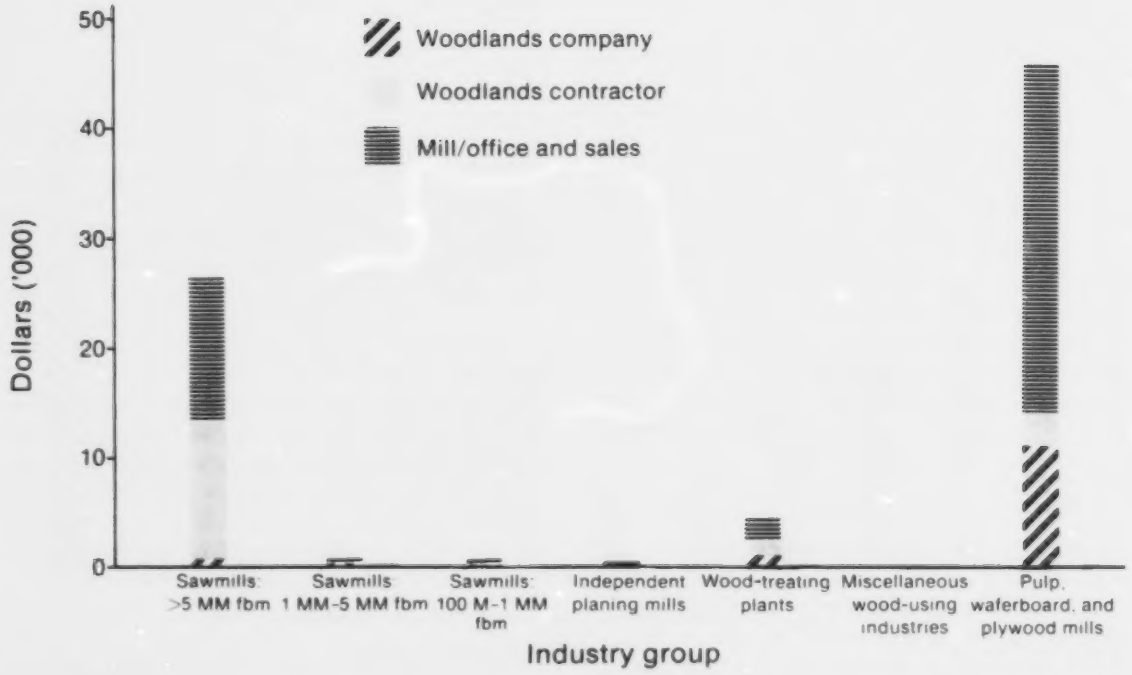

Figure 56. Gross wages and salaries paid by forest industry group, 1985.

is highly sensitive to trends and cycles in the forest industry that are, in large part, beyond the community's control (White et al. 1986). Thus, it is important for policy-makers and managers to know the location of forestry-dependent communities when evaluating forestry-related opportunities and programs (Schuster et al. 1975; White et al. 1986).

Location quotients are one tool used to describe geographical concentration or specialization in a particular industry (Schuster et al. 1975). They are calculated by comparing a statistic of a specific industry with the same characteristic in a larger base system. For example, if 20% of Community A's employment is found in the forest industry while only 5% of Saskatchewan's employment is in the forest industry, the location quotient for Community A is 400 (i.e., [0.200/0.050] × 100). A reasonable interpretation of this value is that employment in Community A is 400% more concentrated in forestry than the provincial average.

It is acknowledged that this method is not perfect in identifying forestry-dependent communities[10]. A trade-off exists between analytical sophistication and analytical detail (Schuster et al. 1975). Given the objective of this report, analytical sophistication was sacrificed in favor of geographic and industrial detail.

Using 1981 Census of Canada data, employment-based location quotients were calculated for the logging and forestry service, wood industries, paper and allied industry, and the total forest industry by census subdivision. A community was considered to be forestry-dependent if its location quotient equalled or exceeded the value of 10 (i.e., where total forestry employment is 10 times more concentrated than the provincial average). Based on this criterion, Table 15 identifies Saskatchewan's forestry-dependent communities.

In 1981, a total of 31 communities were identified as being dependent upon the forest industry. Of these communities, 10 (or approximately 32%) were Indian reserves. Within many of these areas, opportunities for socioeconomic growth are limited, and forestry-related activities are often identified as the sole source of further development.

[10] A different approach was employed by White et al. (1986). In addition to identifying forestry-dependent communities, the study calcualted the degree of economic spcialization. Although this information is useful, a lack of available data precluded the measurement of economic specialization of Saskatchewan communities.

Table 15. Forestry-dependent communities in Saskatchewan, 1985 (Source: Statistics Canada 1982.)

Location	Classi-fication[a]	Number employed (actual)				
		Total	Logging and services	Wood industries	Paper and allied	Total forestry
Choiceland	R	35	15	0	0	15
Grandmother's Bay 219	R	25	10	0	0	10
Hudson Bay 394	RM	930	95	250	0	345
Pelican Narrows 184B	R	150	55	0	0	55
Hudson Bay	T	1070	20	350	0	370
Big River	T	265	30	60	0	90
Sturgeon Weir 184F	R	15	5	0	0	5
Stanley 157	R	90	15	0	10	25
Meath Park	VL	80	10	0	10	20
Peter Pond Lake 193	R	80	0	20	0	20
Sucker River 156C	R	20	5	0	0	5
Smeaton	VL	90	20	0	0	20
Weirdale	VL	45	10	0	0	10
Denholm	VL	45	0	10	0	10
Valparaiso	VL	25	0	5	0	5
Canoe Lake 165	R	80	0	15	0	15
Shell Lake	VL	55	10	0	0	10
Paddockwood	VL	115	10	0	10	20
Fairlight	RM	35	0	5	0	5
Montreal Lake 106	R	70	5	0	5	10
Leoville	VL	150	20	0	0	20
Churchbridge	T	225	20	5	5	30
Arran	VL	40	5	0	0	5
Chitek Lake	RV	40	5	0	0	5
Big River 555	RM	450	5	45	0	50
Atakakup 104	R	180	20	0	0	20
Love	VL	45	5	0	0	5
Endeavor	V	45	5	0	0	5
Bulyea	VL	45	5	0	0	5
Moose Jaw 161	RM	1210	0	120	10	130
Garden River 490	RM	395	5	10	25	40
Glaslyn	VL	210	20	0	0	20
Lac La Ronge 156	R	105	5	5	0	10
Medste	VL	110	0	10	0	10
Weekes	VL	60	0	5	0	5
Bjorkdale	VL	125	10	0	0	10
White Fox	VL	155	0	10	0	10
Lakeland 521	RM	245	10	0	5	15
Carrot River	T	495	0	30	0	30
St. Louis	VL	165	10	0	0	10

Percent employed				Location quotients			
Logging and services	Wood industries	Paper and allied	Total forestry	Logging and services	Wood industries	Paper and allied	Total forestry
42.9	0.0	0.0	42.9	137.9	0.0	0.0	44.4
40.0	0.0	0.0	40.9	128.7	0.0	0.0	41.4
10.2	26.9	0.0	37.1	32.9	58.1	0.0	38.4
36.7	0.0	0.0	36.7	118.0	0.0	0.0	38.0
1.9	32.7	0.0	34.6	6.0	70.7	0.0	35.8
11.3	22.6	0.0	34.0	36.4	48.9	0.0	35.2
33.3	0.0	0.0	33.3	107.3	0.0	0.0	34.5
16.7	0.0	11.1	27.8	53.6	0.0	58.0	28.8
12.5	0.0	12.5	25.0	40.2	0.0	65.3	25.9
0.0	25.0	0.0	25.0	0.0	54.0	0.0	25.9
25.0	0.0	0.0	25.0	80.5	0.0	0.0	25.9
22.2	0.0	0.0	22.2	71.5	0.0	0.0	23.0
22.2	0.0	0.0	22.2	71.5	0.0	0.0	23.0
0.0	22.2	0.0	22.2	0.0	48.0	0.0	23.0
0.0	20.0	0.0	20.0	0.0	43.2	0.0	20.7
0.0	18.8	0.0	18.8	0.0	40.5	0.0	19.4
18.2	0.0	0.0	18.2	58.5	0.0	0.0	18.8
8.7	0.0	8.7	17.4	28.0	0.0	45.4	18.0
0.0	14.3	0.0	14.3	0.0	30.9	0.0	14.8
7.1	0.0	7.1	14.3	23.0	0.0	37.3	14.8
13.3	0.0	0.0	13.3	42.9	0.0	0.0	13.8
8.9	2.2	2.2	13.3	28.6	4.8	11.6	13.8
12.5	0.0	0.0	12.5	40.2	0.0	0.0	13.0
12.5	0.0	0.0	12.5	40.2	0.0	0.0	13.0
1.1	10.0	0.0	11.1	3.6	21.6	0.0	11.5
11.1	0.0	0.0	11.1	35.8	0.0	0.0	11.5
11.1	0.0	0.0	11.1	35.8	0.0	0.0	11.5
11.1	0.0	0.0	11.1	35.8	0.0	0.0	11.5
11.1	0.0	0.0	11.1	35.8	0.0	0.0	11.5
0.0	9.9	0.8	10.7	0.0	21.4	4.3	11.1
1.3	2.5	6.3	10.1	4.1	5.5	33.1	10.5
9.5	0.0	0.0	9.5	30.6	0.0	0.0	9.9
4.8	4.8	0.0	9.5	15.3	10.3	0.0	9.9
0.0	9.1	0.0	9.1	0.0	19.6	0.0	9.4
0.0	8.3	0.0	8.3	0.0	18.0	0.0	8.6
8.0	0.0	0.0	8.0	25.7	0.0	0.0	8.3
0.0	6.5	0.0	6.5	0.0	13.9	0.0	6.7
4.1	0.0	2.0	6.1	13.1	0.0	10.7	6.3
0.0	6.1	0.0	6.1	0.0	13.1	0.0	6.3
6.1	0.0	0.0	6.1	19.5	0.0	0.0	6.3

Continued on next page

Table 15. Concluded

Location	Classi-fication[a]	Number employed (actual)				
		Total	Logging and services	Wood industries	Paper and allied	Total forestry
Porcupine 395	RM	840	25	25	0	50
Division No. 18	UNO	3545	140	55	15	210
Bredenbury	T	170	10	0	0	10
Bjorkdale 426	RM	680	20	15	5	40
Buckland 491	RM	1735	0	50	50	100
Candle Lake	RM	90	5	0	0	5
Parkdale 498	RM	360	5	15	0	20
Maryfield	VL	180	10	0	0	10
Edam	VL	180	10	0	0	10
Torch River 488	RM	1095	40	20	0	60
Prince Albert	C	15115	270	105	400	775
Prince Albert 461	RM	1340	25	0	40	65
Moosomin	T	1150	0	55	0	55
Canwood	VL	105	5	0	0	5
Carieville	VL	110	0	5	0	5
La Ronge	T	1450	45	15	0	60
Birch Hills	T	395	10	0	5	15
Meadow Lake	T	1760	40	25	0	65
Big River 118	R	140	5	0	0	5
Kinistino	T	285	10	0	0	10
Kitsakie 156 B	R	145	5	0	0	5
Cote 64	R	150	0	5	0	5
Saskatchewan Landing 167	RM	300	0	10	0	10
Climax	VL	610	20	0	0	20
Meadow Lake 588	RM	1230	5	35	0	40
Arborfield	T	160	0	5	0	5
Argyle 1	RM	165	0	5	0	5
Hazeldell 335	RM	510	15	0	0	15
Milestone	T	175	5	0	0	5
Marquis	VL	175	5	0	0	5

[a] VL = village; T = town; C = city; RM = rural municipality; LGD = local government district; UNO = unorganized community.

Percent employed				Location quotients			
Logging and services	Wood industries	Paper and allied	Total forestry	Logging and services	Wood industries	Paper and allied	Total forestry
3.0	3.0	0.0	6.0	9.6	6.4	0.0	6.2
3.9	1.6	0.4	5.9	12.7	3.4	2.2	6.1
5.9	0.0	0.0	5.9	18.9	0.0	0.0	6.1
2.9	2.2	0.7	5.9	9.5	4.8	3.8	6.1
0.0	2.9	2.9	5.8	0.0	6.2	15.1	6.0
5.6	0.0	0.0	5.6	17.9	0.0	0.0	5.8
1.4	4.2	0.0	5.6	4.5	9.0	0.0	5.8
5.6	0.0	0.0	5.6	17.9	0.0	0.0	5.8
5.6	0.0	0.0	5.6	17.9	0.0	0.0	5.8
3.7	1.8	0.0	5.5	11.8	3.9	0.0	5.7
1.8	0.7	2.6	5.1	5.7	1.5	13.8	5.3
1.9	0.0	3.0	4.9	6.0	0.0	15.6	5.0
0.0	4.8	0.0	4.8	0.0	10.3	0.0	5.0
4.8	0.0	0.0	4.8	15.3	0.0	0.0	4.9
0.0	4.5	0.0	4.5	0.0	9.8	0.0	4.7
3.1	1.0	0.0	4.1	10.0	2.2	0.0	4.3
2.5	0.0	1.3	3.8	8.1	0.0	6.6	3.9
2.3	1.4	0.0	3.7	7.3	3.1	0.0	3.8
3.6	0.0	0.0	3.6	11.5	0.0	0.0	3.7
3.5	0.0	0.0	3.5	11.3	0.0	0.0	3.6
3.4	0.0	0.0	3.4	11.1	0.0	0.0	3.6
0.0	3.3	0.0	3.3	0.0	7.2	0.0	3.5
0.0	3.3	0.0	3.3	0.0	7.2	0.0	3.5
3.3	0.0	0.0	3.3	10.6	0.0	0.0	3.4
0.4	2.8	0.0	3.3	1.3	6.1	0.0	3.4
0.0	3.1	0.0	3.1	0.0	6.8	0.0	3.2
0.0	3.0	0.0	3.0	0.0	6.5	0.0	3.1
2.9	0.0	0.0	2.9	9.5	0.0	0.0	3.0
2.9	0.0	0.0	2.9	9.2	0.0	0.0	3.0
2.9	0.0	0.0	2.9	9.2	0.0	0.0	3.0

CHAPTER VIII

SUMMARY AND CONCLUSIONS

Saskatchewan's forest industry contributes diversity to a provincial economy dominated by agriculture and mining. High manufacturing costs and low productivity, however, jeopardize the future health of the forestry sector. In 1985, the forest industry was composed of 180 firms that, for the most part, manufactured and sold commodity types of forest products. Market oversupply, depressed product prices, and increasing competition (both domestic and international) threaten the profitability of all but a few of Saskatchewan's forestry firms. In addition, overdependence on U.S. markets and growing protectionism in that country (e.g., the 15% export charge on softwood lumber) have raised serious concerns regarding the stability of Saskatchewan's forest industry.

Saskatchewan does, however, enjoy a comparative advantage by possessing a surplus of wood fiber. Provincial timber supply figures indicate that Saskatchewan has an annual softwood surplus of 1 633 000 m^3 and an annual hardwood surplus of 2 277 000 m^3. Due to forest characteristics and existing transportation networks, it is estimated that 50% of the softwood surplus and 85% of the hardwood surplus are economically accessible. Saskatchewan's forest resource could support a significant expansion of the forestry sector, increasing the softwood industry by approximately one-third and doubling the size of the hardwood industry. Industrial expansion, however, would need to be carefully coordinated to prevent the aggravation of current localized wood shortages.

Evolving global markets, advanced manufacturing technology, a timber surplus, and access to low-cost energy present real opportunities for economic growth. Efforts that increase the production of existing commodities will only contribute to excess supply, depressed prices, and reduced profitability. The focus of forest industry development will therefore need to be on the manufacture of value added products. These products, which embody technological progress, are capable of sustaining the high manufacturing costs that currently characterize Saskatchewan's forest industry. Saskatchewan must begin to move in this direction as emerging suppliers elsewhere in the world may displace significant portions of Saskatchewan's current product mix.

Development of Saskatchewan's forest industry is a challenging task requiring identification of opportunities and cooperation and commitment from industry, governments, and research agencies. Progressive forestry initiatives will establish Saskatchewan as a tough competitor within the global environment.

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APPENDIXES

Appendix 1. Standard Industrial Classification of forest industries.

Appendix 2. Data collection and processing.

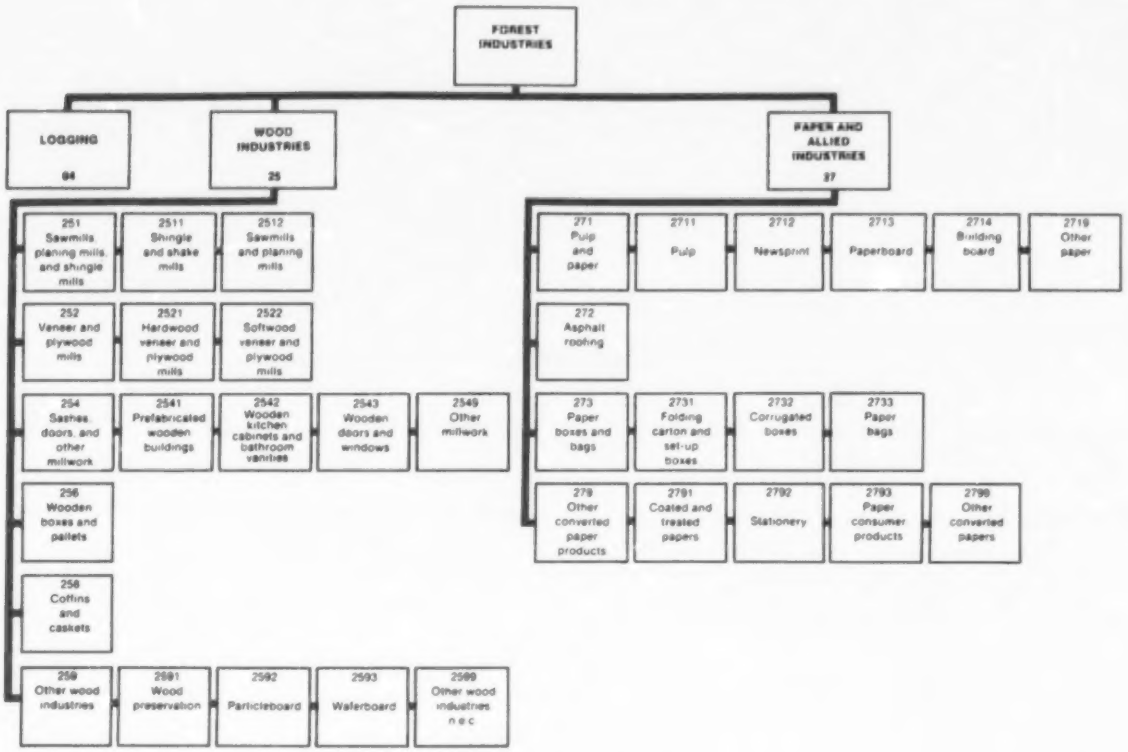
Appendix 3. History of forest industry surveys in Saskatchewan.

Appendix 4. Seasonality of employment by forest industry group.

APPENDIX 1

STANDARD INDUSTRIAL CLASSIFICATION OF FOREST INDUSTRIES

(Source: Statistics Canada 1980.)



APPENDIX 2

DATA COLLECTION AND PROCESSING

Information on Saskatchewan's forest industry was collected from primary and secondary sources. Primary data were obtained from a survey of the forest products industry in Saskatchewan. During the winter of 1985-86, research scientists from Forintek Canada Corporation used a detailed questionnaire to conduct interviews with all provincial forest industry operations, except sawmills producing less than 100 M fbm per year. Data were collected for a 1-year period (either fiscal or calendar) that ended in 1985. Follow-up telephone calls were used to complete and verify the data when necessary. Data for small sawmill operations (i.e., mills producing less than 100 M fbm per year) were obtained from the provincial forestry records of the Saskatchewan Department of Parks and Renewable Resources, Forestry Division.

The data are provided at the most-detailed level feasible without disclosing sensitive information. To ensure confidentiality of proprietary data, information for waferboard and plywood manufactures are aggregated with data from the pulp industry.

Secondary data were obtained from Statistics Canada. This information was used to supplement the survey data and to permit comparison among industries and provinces. Due to confidentiality requirements, data are presented at the two-digit level for the logging industry (SIC 04), the wood industries (SIC 25), and the paper and allied industries (SIC 27).

Information in this report is presented using graphs and charts. Detailed data used to generate individual figures are available upon request. Production statistics for the sawmill and independent planing mill groups are presented in Imperial units (board feet). This is done to accommodate mills within these two industry groups as they continue to report their production and manufacture and market their output using Imperial dimensions. Metric units are used to describe production data for all other industries.

APPENDIX 3

HISTORY OF FOREST INDUSTRY SURVEYS IN SASKATCHEWAN

This study is the third in a series of reports by the Canadian Forestry Service on Saskatchewan's forest industry. The first, by Teskey and Smyth (1975), examined the economic impact of the forestry sector on the provincial economy in 1972. Data were collected and analyzed from a survey of primary wood-using mills in the province. The authors concluded that a forest industry three times the 1972 level could be supported by the timber inventory. They noted, however, that the high costs associated with harvesting and processing this unallocated timber precluded complete expansion to the full potential.

A follow-up study in 1980 by Ondro and Williamson (1985) investigated the role of forestry in the provincial economy. Once again, data were obtained via a survey of the primary wood-using industries. Ondro and Williamson found that the forest industry made only a small contribution to the provincial economy. They did identify, however, seven communities with a total population of 7413 that were economically dependent upon the forest industry.

APPENDIX 4

SEASONALITY OF EMPLOYMENT BY FOREST INDUSTRY GROUP

Figure A. Seasonality of employment in sawmills 5 MM fbm and over annual production.

Figure B. Seasonality of employment in sawmills 1 MM to 5 MM fbm annual production.

Figure C. Seasonality of employment in sawmills 100 M to 1 MM fbm annual production.

Figure D. Seasonality of employment in independent planing mills.

Figure E. Seasonality of employment in wood-treating plants.

Figure F. Seasonality of employment in miscellaneous wood-using industries.

Figure G. Seasonality of employment in pulp, wafer-board, and plywood mills.

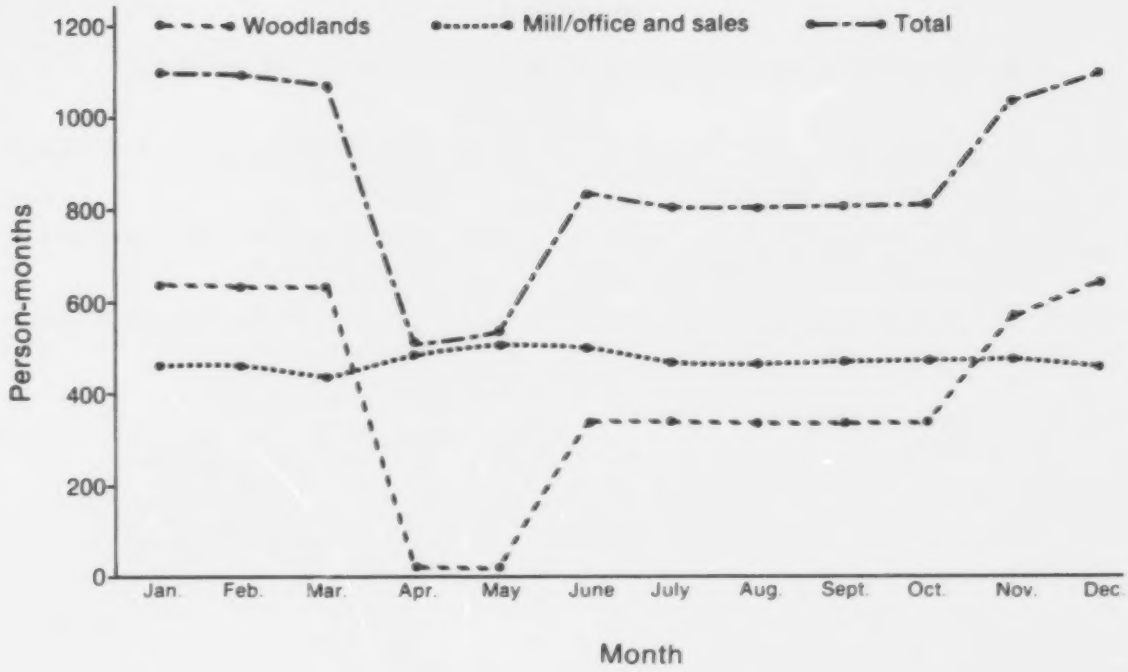


Figure A. Seasonality of employment in sawmills 5 MM fbm and over annual production.

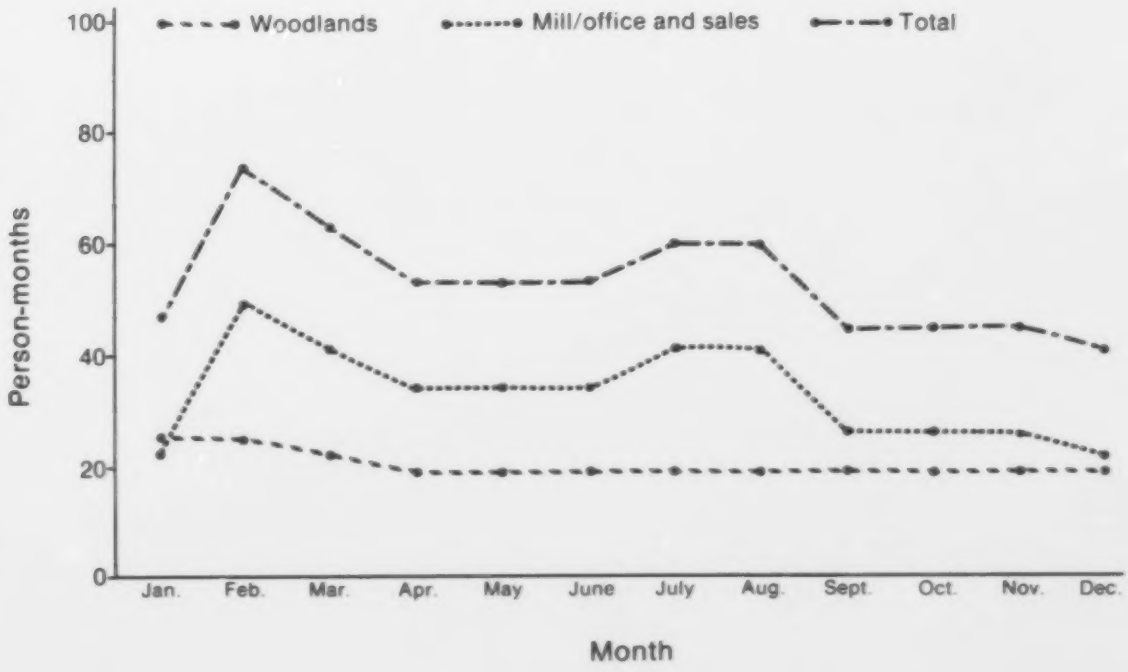


Figure B. Seasonality of employment in sawmills 1 MM to 5 MM fbm annual production.

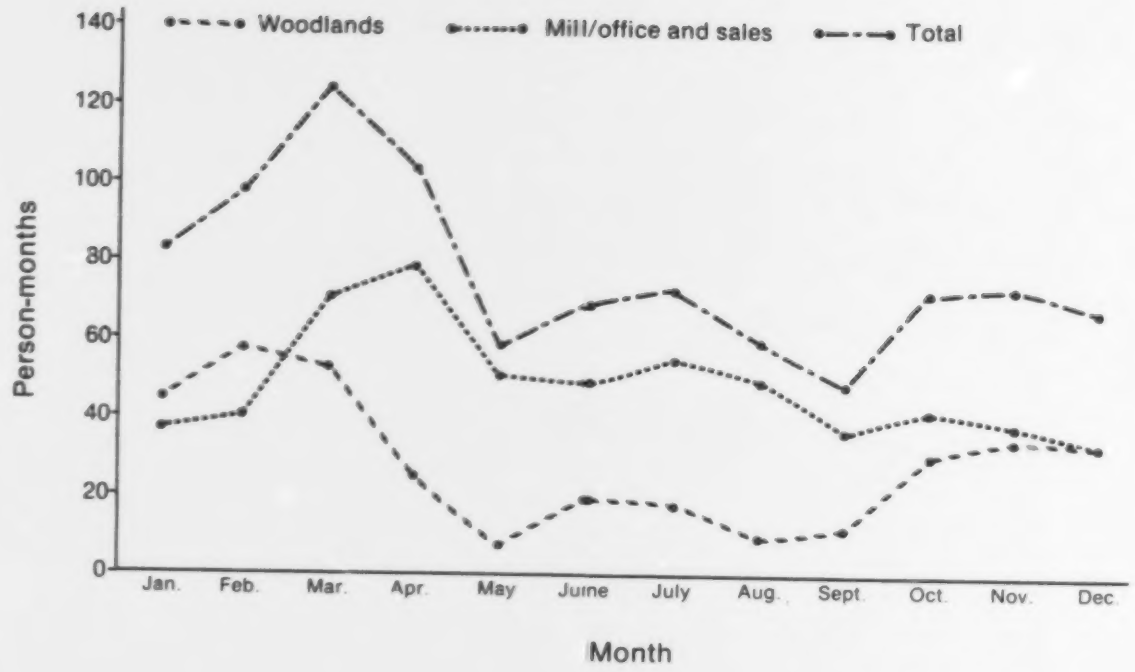


Figure C. Seasonality of employment in sawmills 100 M to 1MM fbm annual production.

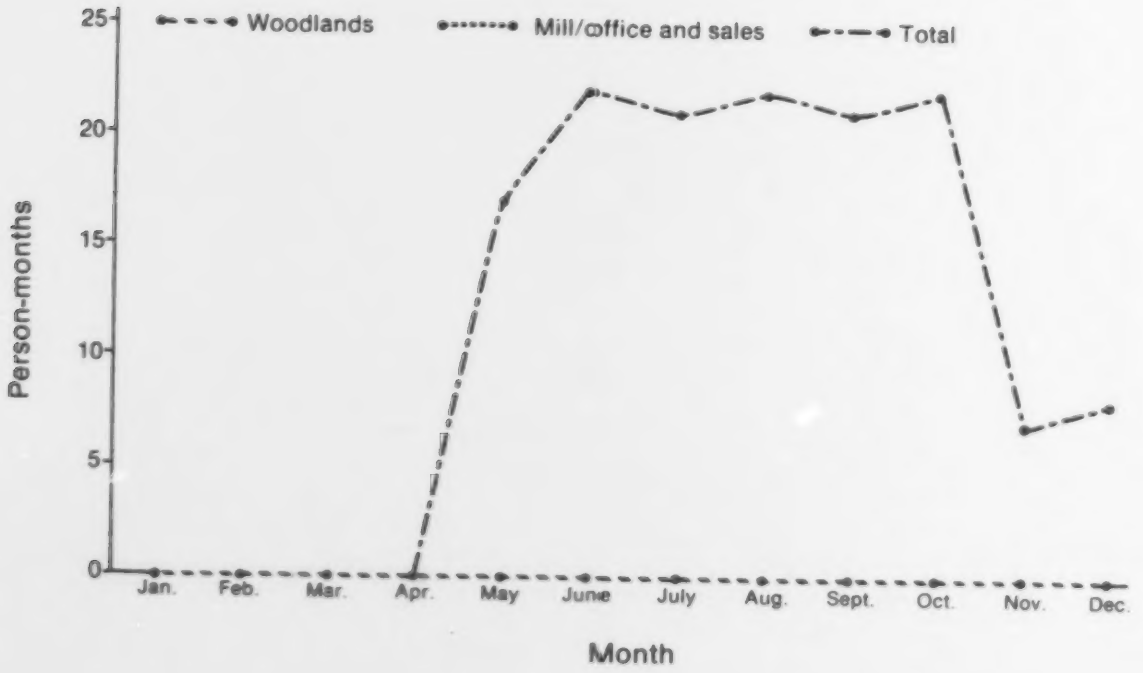


Figure D. Seasonality of employment in independent planing mills.

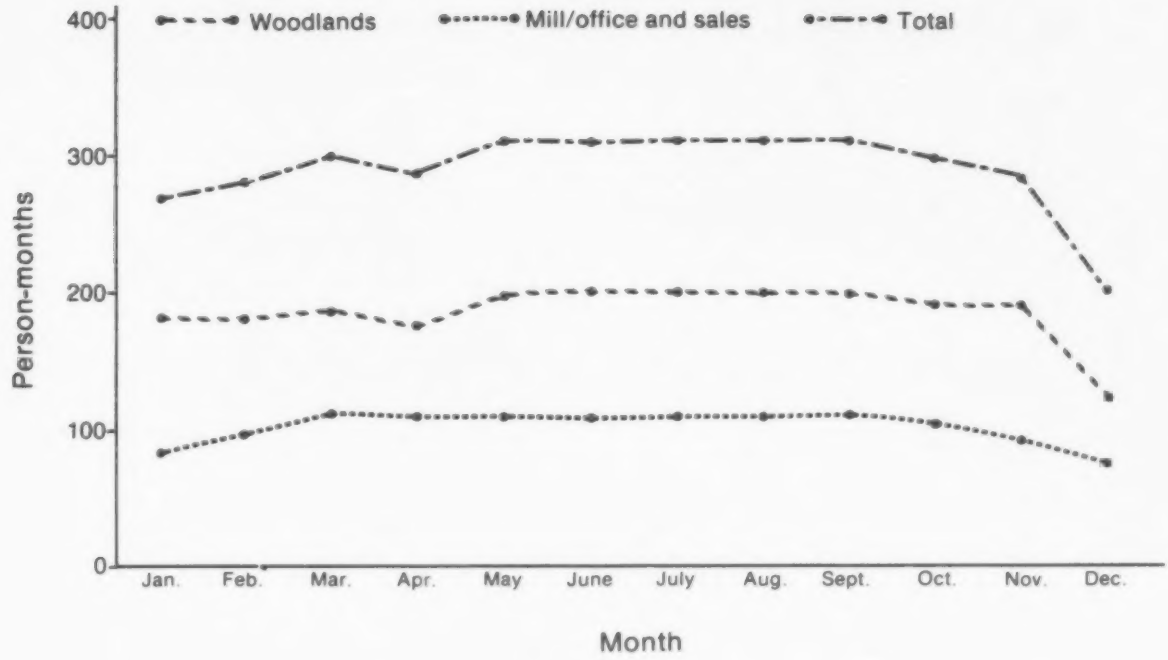


Figure E. Seasonality of employment in wood-treating plants.

Figure F. Seasonality of employment in miscellaneous wood-using industries.

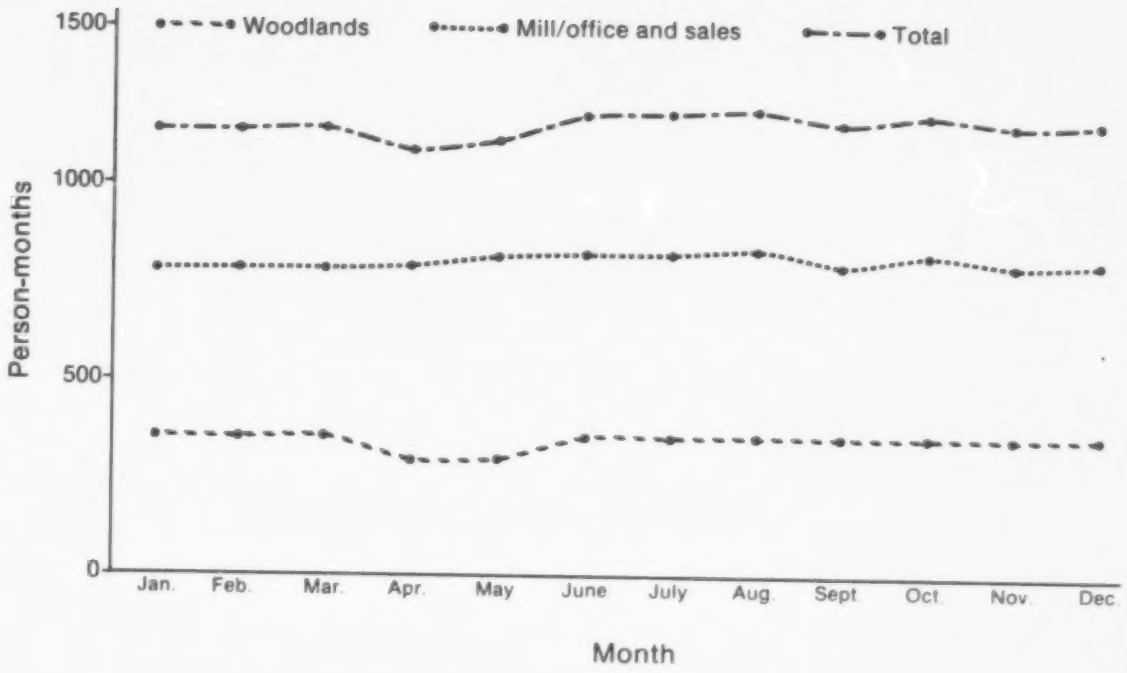


Figure G. Seasonality of employment in pulp, waferboard, and plywood mills.